

A GEOGRAPHY  
OF  
WESTERN EUROPE

---

Printed in Great Britain for the UNIVERSITY OF LONDON PRESS LTD  
by HATTELL, WATSON AND VINNY, LD, London and Aylesbury

## FOREWORD

WHEN the Standing Committee for Geography in Public Schools was formed, one of its main objects was to endeavour to obtain textbooks which were more suitable than existing ones to the needs of the Public Schools. With this object in view, the sub-committee appointed with special reference to textbooks undertook, among other activities, to produce a work on Western Europe which should represent the needs of the Public School geography master. Several practising masters were asked to share in the work, so that a general mean of requirement might be represented. A restricted area was chosen, so as to provide an opportunity of full treatment. The standard fixed was that of the Oxford and Cambridge Joint Board School Certificate and a little beyond, since that is the stage for which no book satisfactorily caters at present.

It is realised that some measure of unity must be sacrificed in a book of composite authorship. Yet, on the other hand, areas often need individual treatment, and few writers are really competent to treat more than one in detail. Hence, it is considered that the unity sacrificed is more than compensated for by the individuality of separate monographs.

The actual boundaries of the area offered some difficulty. Assuredly, what the brains of all Europe have failed to agree upon in many centuries, a small committee was not likely to settle in a few weeks to the satisfaction of all. Generally speaking, the policy has been to give a geographical account of Western Europe and its civilisation, and in order to do this completely it has sometimes been necessary to overstep what are commonly regarded as the limits of the area. The British Isles have been omitted, as it was felt that for English boys the detail necessary must have increased the size of the book out of all proportion.

The writers lay no claim to originality of matter, since their attention has been devoted mainly to selection and presentation of facts available elsewhere

The thanks of the Sub-committee are due to Mr W Stanley Murrell, the Manager of the University of London Press, for his zealous help in the production of the book

E D. L.

*August 1928*

# CONTENTS

	PAGE
FOREWORD . . . . .	V
CHAPTER I	
INTRODUCTORY GENERAL SURVEY, INCLUDING THE BRITISH ISLES . . . . .	I
By E. D. LABORDE	
CHAPTER II	
FRANCE . . . . .	37
By J. H. STEMBRIDGE	
CHAPTER III	
THE VALLEY OF THE RHONE AND SAÔNE . . . . .	93
By E. D. LABORDE	
CHAPTER IV	
ITALY . . . . .	131
By D. GRAY	
CHAPTER V	
THE IBERIAN PENINSULA . . . . .	168
By T. TANQUERAY	
CHAPTER VI	
THE RHINE VALLEY . . . . .	205
By T. TANQUERAY	

## CHAPTER VII

THE NETHERLANDS AND BELGIUM . . . . .	PAGE 226
BY R J EVANS	

## CHAPTER VIII

SCANDINAVIA AND DENMARK . . . . .	268
BY D GRAY AND J A DELL	

INDEX . . . . .	307
-----------------	-----

## LIST OF ILLUSTRATIONS

	PAGE
1. MAIN STRUCTURE LINES OF WESTERN EUROPE . . .	3
2. MAIN CLIMATIC REGIONS OF WESTERN EUROPE . . .	8
3. JULY ISOTHERMS IN WESTERN EUROPE . . .	10
4. JANUARY ISOTHERMS IN WESTERN EUROPE . . .	11
5. RAINFALL IN WESTERN EUROPE DURING JULY . . .	12
6. RAINFALL IN WESTERN EUROPE DURING JANUARY . . .	13
7. THE RACES OF WESTERN EUROPE . . . . .	16
8. AREAS CONTROLLED BY WESTERN EUROPEANS OR THEIR DESCENDANTS . . . . .	27
9. MAIN TRADE ROUTES OF THE WORLD . . . . .	34
10. MAIN INTERNATIONAL RAILWAYS OF WESTERN EUROPE	35
11. SIMPLIFIED GEOLOGICAL MAP OF FRANCE . . . . .	38
12. CLIMATE OF FRANCE. SUMMER CONDITIONS . . . . .	48
13. CLIMATE OF FRANCE. WINTER CONDITIONS . . . . .	49
14. ECONOMIC PRODUCTS OF FRANCE . . . . .	54
15. INDUSTRY AND COMMERCE . . . . .	60
16. PARIS AS A FOCUS OF ROUTES . . . . .	64
17. MAP OF THE PARIS BASIN . . . . .	65
18. BLOCK DIAGRAM ILLUSTRATING THE FORMATION OF THE PARIS BASIN . . . . .	66
19. THE GROWTH OF PARIS ; STRASBOURG . . . . .	68
20. CHIEF RAILWAYS AND CANALS OF FRANCE . . . . .	70
21. POSITION OF BORDEAUX . . . . .	72
22. POSITION OF TOULOUSE . . . . .	73
23. BLOCK DIAGRAM ILLUSTRATING THE GEOGRAPHICAL FACTORS WHICH HAVE INFLUENCED THE GROWTH OF TOULOUSE . . . . .	73
24. SIMPLIFIED ETHNOGRAPHICAL MAP OF FRANCE . . . . .	78

	PAGE
25. ANCIENT PROVINCES OF FRANCE . . . .	80
26. POLITICAL DEVELOPMENT OF FRANCE, I . . . .	82
27. POLITICAL DEVELOPMENT OF FRANCE, II . . . .	84
28. COLONIAL EXPANSION OF FRANCE . . . .	87
29. MAIN LINES OF STRUCTURE IN THE RHONE-SAÔNE VALLEY	94
30. BLOCK DIAGRAM ILLUSTRATING THE STRUCTURE OF THE VALLEY OF THE RHONE AND SAÔNE . . . .	95
31. SIMPLIFIED RELIEF MAP OF THE VALLEY OF THE RHONE AND SAÔNE . . . . .	98
32. TEMPERATURE AND RAINFALL IN JULY AND JANUARY .	101
33. VEGETATION AND ECONOMIC PRODUCTS . . . .	104
34. THE VALLEY OF THE RHONE AND SAÔNE. MAIN ROUTES	111
35. GEOGRAPHICAL FACTORS INFLUENCING THE GROWTH OF DIJON . . . . .	113
36. GEOGRAPHICAL FACTORS INFLUENCING THE GROWTH OF LYON . . . . .	115
37. THE KINGDOM OF BURGUNOY AS CONCEIVED BY CHARLES THE BOLD . . . . .	125
38. DENSITY OF POPULATION IN THE VALLEY OF THE RHONE AND SAÔNE . . . . .	128
39. SIMPLIFIED RELIEF AND COMMUNICATIONS OF ITALY .	132
40. CLIMATE OF ITALY : SUMMER CONDITIONS. . . .	136
41. CLIMATE OF ITALY : WINTER CONDITIONS . . . .	137
42. RAINFALL OF ITALY . . . . .	138
43. VEGETABLE AND ANIMAL PRODUCTS OF ITALY . . .	143
44. GEOGRAPHICAL FACTORS INFLUENCING THE GROWTH OF GENOA, MILAN, AND TURIN . . . . .	149
45. GEOGRAPHICAL FACTORS INFLUENCING THE GROWTH OF FLORENCE . . . . .	152
46. THE SITE OF ROME . . . . .	153
47. DENSITY OF POPULATION . . . . .	156
48. A EUROPEAN BATTLEGROUND . . . . .	162
49. SIMPLIFIED GEOLOGICAL MAP OF THE IBERIAN PENINSULA	169
50. MAIN STRUCTURE LINES OF THE PENINSULA . . .	170
51. MEAN ANNUAL RAINFALL . . . . .	173



# LIST OF ILLUSTRATIONS

xi

PAGE

52.	MAIN CLIMATIC REGIONS OF THE PENINSULA . . .	174
53.	NATURAL ROUTES OF THE PENINSULA . . .	182
54.	CHIEF RAILWAYS OF THE PENINSULA . . .	184
55.	THE OLD KINGDOMS OF THE IBERIAN PENINSULA .	191
56.	SPANISH AND PORTUGUESE EXPLORATION AND SPHERES OF EXPLOITATION IN THE SIXTEENTH CENTURY .	200
57.	SIMPLIFIED GEOLOGICAL MAP OF THE RHINE VALLEY .	205
58.	BLOCK DIAGRAM SHOWING THE STRUCTURE OF THE RHINE VALLEY . . . . .	206
59.	SIMPLIFIED PHYSICAL MAP OF THE RHINE VALLEY .	207
60.	ECONOMIC PRODUCTS AND INDUSTRIES OF THE RHINE VALLEY . . . . .	212
61.	GEOGRAPHICAL FACTORS INFLUENCING THE GROWTH OF FRANKFURT AND COLOGNE . . . . .	213
62.	PRINCIPAL LINES OF RAILWAYS IN THE RHINE VALLEY .	217
63.	POLITICAL BOUNDARIES IN THE RHINE VALLEY IN 887 .	221
64.	POLITICAL BOUNDARIES IN THE RHINE VALLEY IN 1812.	222
65.	SIMPLIFIED GEOLOGICAL MAP OF THE NETHERLANDS AND BELGIUM . . . . .	227
66.	SIMPLIFIED RELIEF MAP OF THE NETHERLANDS AND BELGIUM . . . . .	229
67.	HISTORICAL DEVELOPMENT OF THE DUTCH COASTLINE .	237
68.	RECLAMATION SCHEME OF THE ZUIDER ZEE . . .	238
69.	VEGETABLE AND ANIMAL PRODUCTS OF THE NETHERLANDS AND BELGIUM . . . . .	240
70.	INDUSTRIAL DEVELOPMENT OF THE NETHERLANDS AND BELGIUM . . . . .	244
71.	MAIN LINES OF COMMUNICATION IN THE NETHERLANDS AND BELGIUM . . . . .	249
72.	THE DUCHY OF LUXEMBURG . . . . .	253
73.	PEOPLES OF THE NETHERLANDS AND BELGIUM . .	255
74.	MAP SHOWING DENSITY OF POPULATION IN THE NETHER- LANDS AND BELGIUM . . . . .	256
75.	THE COCKPIT OF EUROPE . . . . .	258
76.	THE DUTCHMAN AND THE WORLD . . . . .	261

	PAGE
77. SIMPLIFIED GEOLOGICAL MAP OF SCANDINAVIA AND DENMARK . . . . .	269
78. BLOCK DIAGRAM ACROSS SCANDINAVIA . . . . .	270
79. DRAINAGE SYSTEMS OF SCANDINAVIA . . . . .	271
80. SIMPLIFIED RELIEF MAP OF SCANDINAVIA AND DENMARK	272
81. CLIMATE OF SCANDINAVIA AND DENMARK: WINTER CONDITIONS . . . . .	276
82. CLIMATE OF SCANDINAVIA AND DENMARK: SUMMER CONDITIONS . . . . .	277
83. RAINFALL OF SCANDINAVIA AND DENMARK. . . . .	278
84. NATURAL PRODUCTS OF SCANDINAVIA . . . . .	286
85. COMMUNICATION AND TOWNS OF SCANDINAVIA . . . . .	290
86. DANISH-GERMAN FRONTIER . . . . .	301

## CHAPTER I

### GENERAL SURVEY

**Relations between Human and Physical Geography.**—During the past thousand years, Western Europe has been the focus of a civilisation which seems destined to impress itself on the whole world. The New World and Australasia have already passed beneath its sway, and those parts of the native population which seemed incapable of assimilating its ideas have rapidly become extinct. Asia itself, including the “unchanging East,” is rapidly becoming westernised and laying aside its own forms of civilisation.

The progress of the development of this civilisation is the field of the historian; yet many of the events of history are utterly meaningless until the geographer has explained their significance. A given set of human conditions will produce different results under different geographical circumstances, as is proved by the development of new racial characteristics by British colonists in their new surroundings. On the other hand, similarity of geographical conditions will tend to produce similar human developments, as can be seen in certain general resemblances in the Japanese, the “English of the Pacific,” to the inhabitants of our own islands. Primitive man is almost wholly the creature of his environment, and, although modern civilisation represents the increase of man’s powers of rising above geographical conditions, yet he can never completely free himself from their influence. Hence, the geographical study of a region must begin with a description of the scene of man’s activities and an analysis of the geographical conditions which have guided his actions.

**Structure and Relief.**—In structure and relief, Western Europe is not a unit, but forms part of a great land mass known as the Old World. At first sight it may appear to be a peninsula of

Asia, and as such it is often said to form part of the continent of Eurasia. But structurally it is hardly to be separated from North Africa, to which it is further linked by similarities of climate. The chief feature in the relief of Europe is a complicated chain of folded mountains which radiate from the Alps. Eastwards these folds run through the Carpathians and the ranges of the Balkan Peninsula right over to Asia, to be continued through the Himalayas to the shores of the Pacific. Westwards they form a great loop through the Pyrenees, Sierra Nevada, Atlas Mountains, Sicily, and the Apennines. Tectonic movements subsequent to the formation of the great folds produced fractures with subsidence to the south, and the western loop was broken in several places. Hence, the Pyrenees are not now continuous with the Alps, and great faults have severed the Sierra Nevada from the Atlas Mountains, and Sicily from the Atlas Mountains on the one hand and from the Apennines on the other. The formation of a great inland sea as a training ground for maritime adventure, and as a means of communication between one part of the region and another, has been one of the chief factors in the growth of Western civilisation.

North of the lines of folded mountains lie the remains of an ancient range to which geologists have given the name of Hercynian Mountains. During the tectonic movements which produced the Alpine folds, this old system, which had been reduced to the condition of a peneplain, was fractured in many places. Alternate subsidence and uplift occurred between the parts, giving rise to a series of block mountains from the Meseta of Spain through the Central Highlands of France and the Vosges to the mountains of Bohemia. In the midst of the western loop of folds, Corsica and Sardinia were left as isolated blocks. Between the series of blocks lie rift valleys, of which that of the Middle Rhine is the most typical case. In this zone, the rift valleys form main routes through the mountains, while the highlands, offering great resistance to erosion, present a monotonous relief, thin, barren soil, and scanty vegetation, and are therefore for the most part thinly peopled "regions of difficulty."

North of the fracture system stretches a vast plain from the

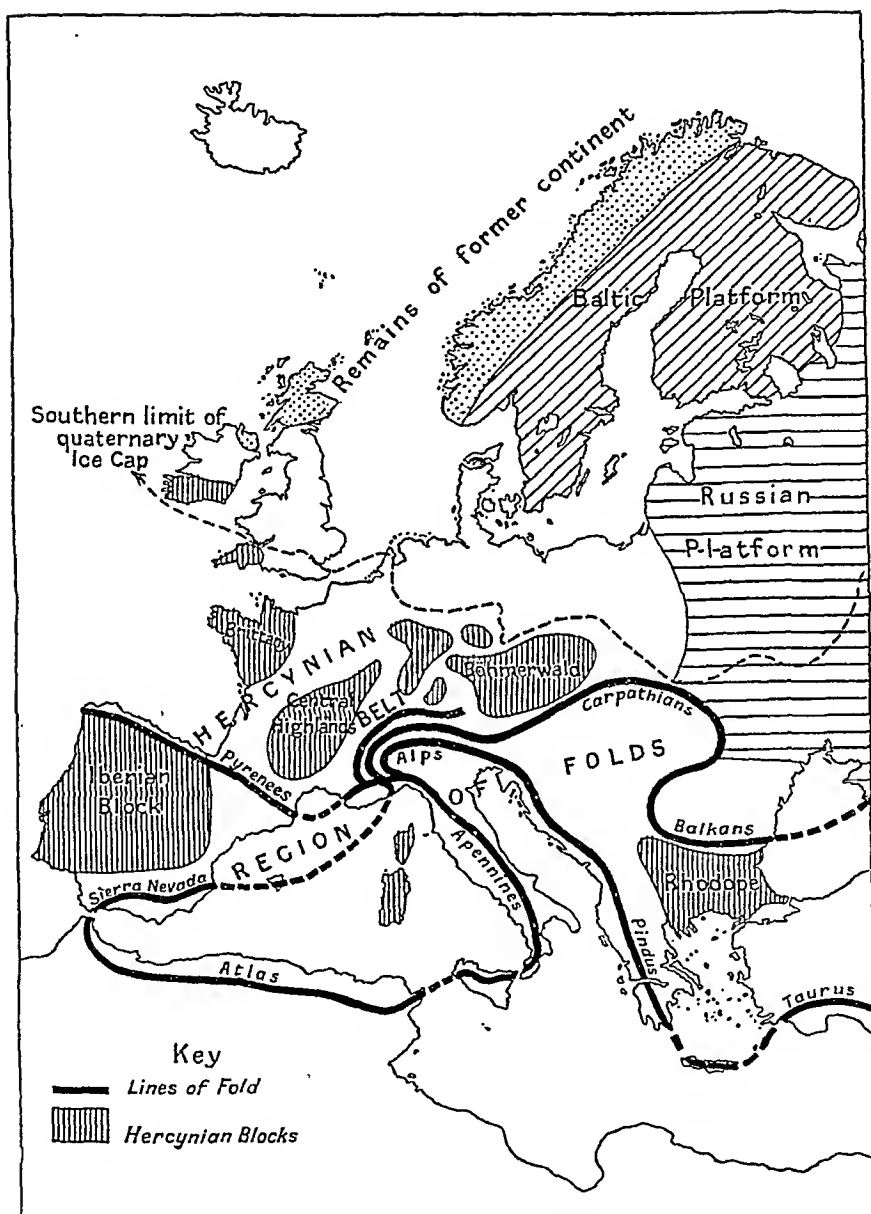


FIG. 1.—MAIN STRUCTURE LINES OF WESTERN EUROPE.

west of England through the North Sea, Holland, Belgium, Northern France, and Denmark almost to the shores of the Pacific. Such a vast plain can only have been formed by slow earth movement, which brought the sea floor above the general sea-level. Too uniform to be the cradle of civilisation, this plain has nevertheless advantages which have enabled it to absorb and extend the early progress made in more sheltered regions, and to become in the end the main seat of what is known as Western civilisation. London, Paris, and Berlin are all on this plain, and there too lie the areas of great concentrations of people. The three chief advantages which have favoured these developments are the <sup>1</sup>great fertility of the soil, the existence of extensive mineral deposits, and the facility for communication. The fertility of the soil is due to the formation of great alluvial tracts, mainly river-basins like the valleys of the Thames, Seine, and Lower Rhine, to the presence of great beds of loess, as in Picardy and the valleys of the Saone and Rhine, and to the pulverisation of the soil by glacial action during the ice ages. Mineral deposits, especially of coal and iron, are found in Wales and the North of England, in Northern France and Belgium, in the Saar basin, and in other parts of Germany. Great industries have sprung up in these places, and it is to this that the great concentrations of population are due.

North-west of the great Eurasian plain lie the remains of the oldest part of Europe. The mountains of Scandinavia, of the Highlands of Scotland, and of Northern Ireland are of Archæan rock, the ancient folds of which have almost disappeared under the action of erosive forces. Although this region presents a multitude of interesting geological forms of structure and relief, yet its human importance is small. The resisting power of the rock enables the transporting agencies of erosion to keep pace with denudation, and consequently the soil is thin or non-existent, the vegetation is composed of hardy types like heather or, in favourable circumstances, of pine forests, while human existence is continued under difficulty and only in small scattered groups.

To each of these structural zones there corresponds a different

type of coastline. The ancient relief of the north-west presents a broken coast mainly of the fjord type. An excellent training ground for maritime experience, these coasts promised at one time to take the lead in exploration, and as early as A.D. 986 Norsemen, who had long since been familiar with every European headland from the White Sea to the Black, reached the coasts of Greenland, and even explored the shores of North America as far as the latitude of New York. But the resources of their homeland were not great enough to allow this nation to compete with its more numerous and wealthier neighbours. Leif Eiriksson's tentative voyages proved the culminating point of the efforts of the Norsemen, and their very achievements were little known and soon forgotten. However, the coasts of Norway still continue to produce a race of bold and skilful sailors and fishermen.

The coasts of the great plain, with their unbroken lines and shallow water, do not tempt men to take to the sea, and great ports have arisen only where exceptional circumstances have counteracted the natural disadvantages. Thus, on the North German coast of the Baltic long stretches exist without a village and even the coastal population is by nature one of landmen. Along the shores of the North Sea and Atlantic, river estuaries, like the Thames, the Humber, the Scheldt, the Elbe, and the Garonne, have permitted the growth of some of the world's greatest ports. The many sheltered openings on the Dutch coast were no doubt one of the causes of the naval supremacy of that nation in the seventeenth century.

On the west coast of the continent, intermediate between the zone of the great plain and the block-mountain system, occurs a region of old folded rock which has undergone subsidence. Here the type of coastline is the ria, which prevails in the west coast of England, Wales, Ireland, and Brittany. It is to the population of these shores that England and France owed their supremacy in naval affairs during the eighteenth and nineteenth centuries. The great early English explorers, like Drake, Hawkins, and Raleigh, and famous Elizabethan sailors like Grenville, were all born and bred in the atmosphere of a ria.

coastline Nor was the supremacy of the West Coast seamen threatened until commercial factors counteracted the purely nautical ones, and enabled Liverpool to overshadow Bristol as the port for trade with America Similarly in France, Brest, though a great naval port like Plymouth, has been overshadowed commercially by Rouen

Fracture coastline occurs in the north and west of Spain. Openings exist, especially in the west, which is the true home of the ria, but the ironbound coast is too dangerous during the frequent storms that occur round it for the development of an extensive maritime life Moreover, Spain by its structure looks to the south, and her explorers and adventurers have been drawn principally from the southern shores

The Mediterranean presents various aspects of the folded coastline. But here structure is of less importance, for the great movements of the ocean are absent, and the special tides and currents of the inland sea are feeble and almost insignificant Consequently, the big rivers build deltas, which become centres of maritime activity, though the rapid deposition of sediment causes the ports to be placed just off the delta These rivers all flow in a great synclinal or fault valley, hence, the deltaic port has an extensive and productive hinterland Barcelona, Marseille, Venice—these are the great ports of Western Europe in the Mediterranean Absence of hinterland prevents the growth of any considerable port not based on a river-valley,<sup>1</sup> but innumerable minor ports exist to serve the needs of restricted areas It was in these little districts, cut off from communication inland by a semi circle of mountains, that the Grecian contribution to Western civilisation was fostered, and the free city-state formed on ideals of political freedom was brought to perfection Small harbours backed by mountains frequently became pirate strongholds after the fall of Rome, and the now picturesque resorts of the Riviera are typical examples of such places It should not be forgotten that maritime enterprise served its apprenticeship in the Mediterranean, and that the first great

<sup>1</sup> Genoa the outlet to the western basin of the Po is a remarkable exception  
See p 131



explorers, Columbus, Vasco da Gama, Magellan, and Amerigo Vespucci were the fruit of training there. Yet it should equally be noted that Columbus and Vespucci were forced to use the resources of a power not wholly Mediterranean, while da Gama and Magellan were Portuguese. The fact is that the great inland sea tends to isolate its inhabitants from the ocean. In various parts, e.g. Venice and Malta, the type of small boat still in use no doubt existed at a very early age and has persisted in spite of the perfection of ideas of construction. This unprogressiveness was no doubt the cause of the inferiority of the Spanish ships of the Armada. To Mediterranean conditions must also be ascribed the Spanish practice of using their ships—as the Romans did—as mere platforms for soldiers.

**Climate.**—If not structurally a unit, Western Europe is more or less distinguished from the rest of the continent by climatic conditions. The countries on the Western seaboard, the British Isles, France, Belgium, Holland, Denmark, and Norway, all share in the maritime temperate climate produced by their geographical environment. Farther east the maritime conditions become less noticeable, and in Sweden and the Rhine valley they are feeble. Beyond this the climate is of the transitional type, leading to the extreme continental conditions of Eastern Germany, Poland, Finland, and Russia. Northern Spain and Portugal share in the maritime climate, but farther south and east—that is, in the south of Spain and France, and in Italy—the Mediterranean type of climate prevails. East of Italy, though the general type is the same, yet the actual details of climate have changed sufficiently to mark off the lands of the Western basin from those of the Eastern. (See fig. 2.)

The general conditions of the maritime type are well known. Temperate by latitude, the climate is modified by the prevailing south-westerly winds, whose own mildness in winter is reinforced by the influence of the Gulf Stream Drift. The range of temperature is therefore low, and, except in the extreme north of Norway and in parts of Sweden, the land is not snowbound for any length of time, nor are the coastal waters frozen over. The January isotherm for 32° F. runs almost due north from the

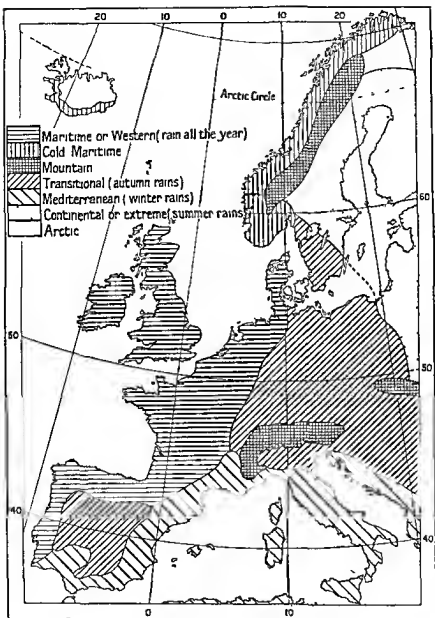


FIG 2—MAIN CLIMATIC REGIONS OF WESTERN EUROPE

head of the Adriatic and right up the west coast of Norway, Munich, Emden, and Bergen having the same mean temperature in that month. Westwards the other isotherms conform, that for  $40^{\circ}$  F. passing through Oban, Liverpool, Bristol, and Bordeaux. In summer, the influence of the sea is not so powerful, and the isotherms have a general east-and-west direction. Hence, the mean July temperature decreases steadily northwards from  $75^{\circ}$  F. in the south to  $50^{\circ}$  F. at the North Cape, giving a range of  $25^{\circ}$  F. over the whole region.

Special conditions of pressure occur. In summer, the pressure and wind system is controlled by the high-pressure centre near the Azores and the low-pressure centre near Iceland. Hence, the inflow of the south-west winds is steady. In August and in the early part of September, the high pressure of the Azores extends and covers Spain and Portugal, Western France, and a good deal of the British Isles. Consequently, that period is usually one of light winds and drought in those districts. In winter, the intensity of the centres of high and low pressure is increased, and the force of the wind is greater. Besides, an anticyclonic area develops over Russia, and at times spreads westwards as far as the British Isles, giving Western Europe a week or fortnight of cold, fine weather. But the regular flow of winds is constantly interrupted in winter by a succession of cyclonic disturbances which come up from the west. As soon as these reach the coast, they turn northwards, to disappear north of Norway if they have not filled up before travelling so far. It is largely to these cyclones that the mildness of the climate of Western Europe is due, and their influence is restricted to the non-Mediterranean parts of that region.

Perhaps, however, the chief effect of the winter cyclones is the good supply of winter rains that they bring. Being travelling convection currents, they yield rain owing to the rise and consequent cooling of successive layers of air. The constant succession of the disturbances in winter causes a steady fall of rain during that season. Where their influence slackens winter rains also lessen. In summer, when a steady south-west wind prevails, the rainfall is chiefly due to the relief; but convection

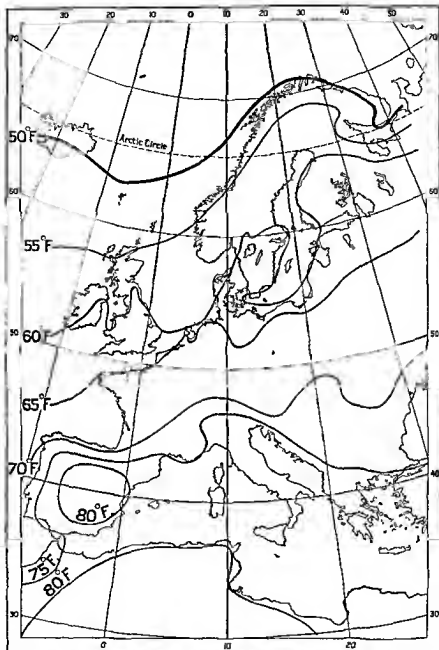


FIG. 3 — JULY ISOTHERMS IN WESTERN EUROPE

Note how under summer conditions, land pushes the isotherms northwards while even small bodies of water, e.g. the Zuyder Zee and Lake Wener, cause a southward bend in them

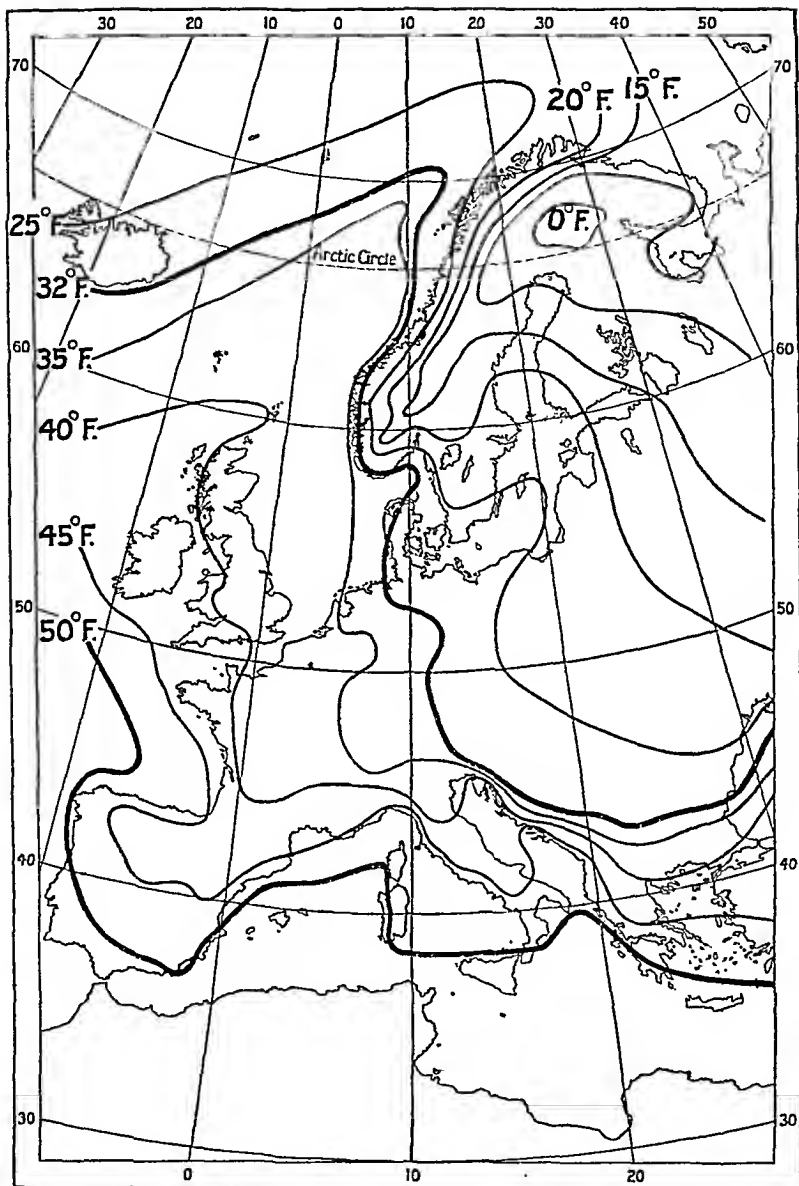


FIG. 4.—JANUARY ISOTHERMS IN WESTERN EUROPE.

Contrast this with Fig. 3, noting especially the predominance under winter conditions of the sea influence which imparts a tendency to run north and south to the isotherms of the western seaboard; the southward bend caused by the presence of land; and the northward bend caused by even the frozen Baltic.

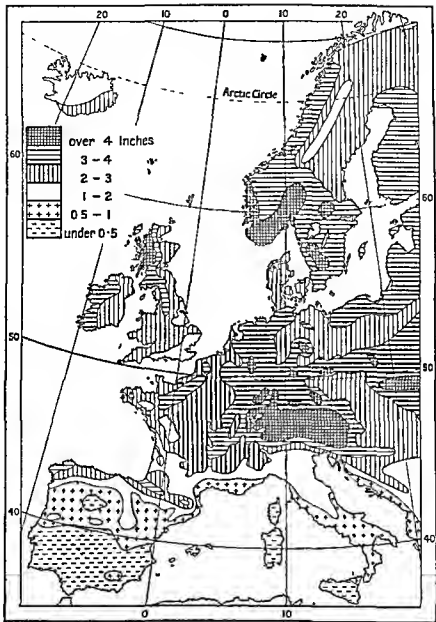


FIG 5—RAINFALL IN WESTERN EUROPE DURING JULY

Note the drought in the Mediterranean region and the comparatively even distribution in the rest of Western Europe

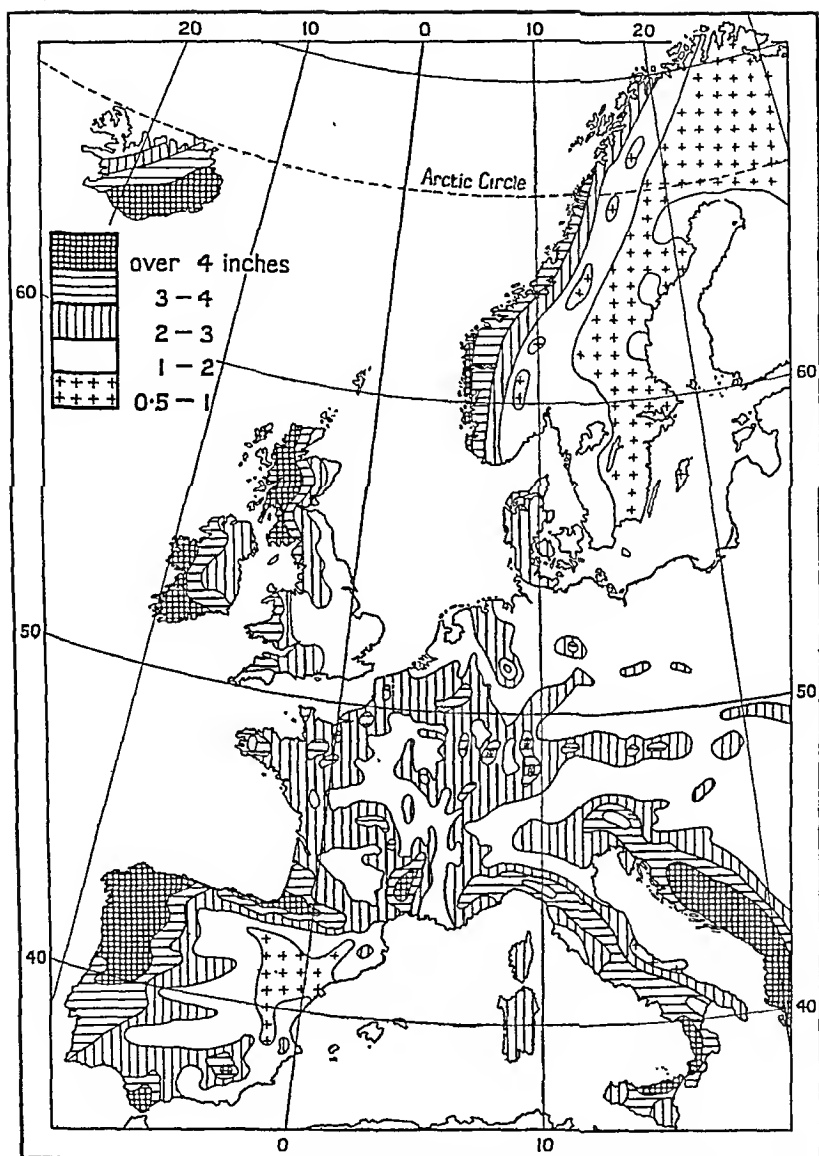


FIG. 6.—RAINFALL IN WESTERN EUROPE DURING JANUARY.

Compare this with Fig. 5 and note the changed conditions; this is the period of rain in the Mediterranean; while elsewhere the amount of rainfall decreases steadily with distance from the Atlantic.

rains also occur, and these supply low-lying regions like the east of England and Holland and Belgium. Cyclonic disturbances also occur in summer and thus bring some rain. They come especially in June, causing thunderstorms and downpours of rain and hail. Hence, the characteristic of this climate is that it has no dry season.

The Mediterranean conditions are quite different. Sub-tropical by latitude, the region is too narrow to contain much variety of temperature at a given season. It is intensely hot in summer, the effect of insolation being increased by the southern aspect of most of the Mediterranean lands of Europe. In winter it is mild, the mean January temperature being  $48^{\circ}\text{F}$ . But conditions of pressure are here peculiar and modify the effect of temperature. During the summer, the high-pressure belt which lies over the Horse Latitudes moves northwards over this region, giving it fine, dry weather with little wind. The stillness of the air increases the local effects of insolation, running up the mean temperature of South eastern Spain and Eastern Italy to  $80^{\circ}\text{F}$ . The soil is pulverised, and the slightest breath of air raises clouds of dust which produce harmful effects on animals and vegetation alike. In winter, the high pressure belt retreats south, leaving the region in the zone of the rain bearing Westerlies. Hence, the peculiarity of the Mediterranean region in having its rain in winter. But the cyclonic disturbances rarely penetrate to this region, which therefore enjoys remarkably reliable weather, and is used as a health resort by persons who wish to escape the variable maritime climate. Eastwards the effect of the south westerlies decreases, and the rainfall grows less, until finally the region shades off into steppes and desert in Asia. Even in Greece a noticeable decrease in rainfall has occurred, except on the west coast. Thus, the mean annual rainfall at Nice is 33.7 inches, at Athens 15.4. The most important features of this type of climate in human geography are its stability, the absence of catastrophic disturbances and many of the minor destructive forces of weather, and its drought.

**Vegetation.**—Drought conditions bring about peculiar features in the vegetation. Most of the flora of the Mediterranean region



is xerophilous, employing various devices for resisting drought. The mildness of the winters allows trees to retain their leaves throughout the year, and the characteristic type of plant is the evergreen. Drought conditions do not favour large trees, and the shrub flourishes rather than the tree. The slightest unfavourable circumstance produces small local areas of difficulty and almost of desert.

Far different is the maritime region, where the soil is uniformly covered with soft, green grass all the year round, and where the parkland type of thin forests of deciduous trees prevails. In the north, the conifer replaces the oak and the beech, and here unfavourable conditions of relief may produce barren peaty or waterlogged areas. Windswept plateaux, except in some limestone districts in France, become heaths and moors. Mountains often provide rich pasture grounds between the tree limit and the snowline. In fine, while the Mediterranean region suffers from drought, the maritime region is liable to suffer from over-humidity.

Races.—The foregoing paragraphs describe the theatre of man's activities. We must now turn to the principal object of geographical study, namely, the influence of the natural environment on human development and the reaction of man to that influence. Of the first inhabitants of Western Europe but little is known. Ethnologists see in the caves of Cromagnon and the lake dwellings of the Lac d'Annecy the traces of the earliest people who dwelt in this region during the intervals between the ice ages ; but these early men are lost in the mists of time. At the dawn of history Western Europe seems to have been peopled by three races. In the south and west, there was a long-headed, dark-skinned, short race, who are thought to have reached Europe by way of Africa before the subsidence of the land bridges at the Straits of Gibraltar and between Sicily and Tunis. It is unlikely that they ever covered all Europe, as they are essentially a sun-loving race ; but as their descendants are supposed to survive in the west of Ireland they must at least have worked their way up the mild coastline of France, and crossed into Britain while the North Sea and the Channel were

still land areas. As they have survived chiefly in Mediterranean lands, they are usually termed the Mediterranean race.

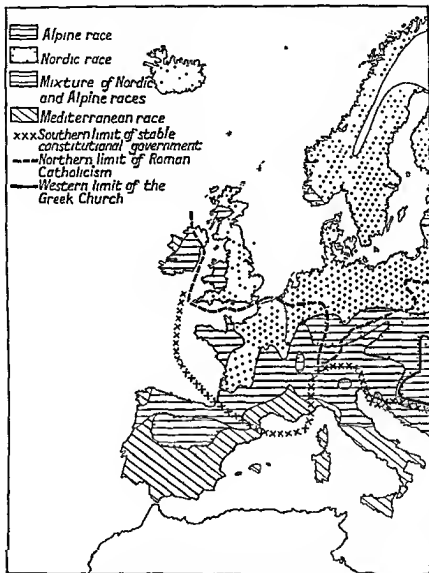


FIG 7—THE RACES OF WESTERN EUROPE

After Ripley and Deniker, but simplified.

At a far later period Western Europe was invaded by a race superior to these aborigines. This was the Alpine race, a taller,

round-headed people, who worked their way westward from Asia. Of their advent nothing is known for certain, but in the early days of the Roman republic they made an attack on the city and all but captured it. This episode probably represented their farthest advance south into Italy. Their defeat forced them back north of the Apennines to the plain of Lombardy, where they maintained their hold, making no further serious effort to penetrate south. Here we meet for the first time a principle which will be frequently referred to during the account of racial expansion, namely, the fact that peoples tend to migrate along parallels of latitude, thus keeping to more or less the same climate to which they were accustomed at the beginning of their migration. The plain of Lombardy is the only part of Italy which does not share the Mediterranean climate, and it looks as if climatic factors were decisive in restraining the southward advance of the Alpine race.

Meanwhile, other tribes of the same race were gradually overrunning the country now known as France, and there, as in Italy, the restraining influence of climate is seen. The Alpine race occupied all the upland areas, such as the Central Highlands, the Alps, and the fastnesses of the Pyrenees. But they were never able to establish themselves in the Midi, where the Mediterranean climate prevails. The same facts are noted in Spain, whither the wave of Alpine migration next passed. At this point the Romans, themselves a Mediterranean people, invaded Gaul and Spain and established a great empire. They did not, however, actually settle in considerable numbers beyond the limit of the Mediterranean climate.

For years previous to the Roman conquest of Gaul and Spain, other peoples of the Mediterranean had been forming settlements and influencing the natives of Western Europe, especially along the southern coasts. These were first of all the Greeks, who tried to reproduce the city-states of their homeland in various parts of Italy, Southern France, and South-eastern Spain. Their racial influence was small owing to their paucity of numbers, but they spread ideas of culture and art which are reflected in much of what we know of the rude civilisation of

the Gauls Close on their heels came the Phœnicians These were traders, anxious to establish entrepôts for the collection of commercial goods, like the tin of Cornwall and the amber of the Baltic, and they were pioneers in exploration and the discovery of trade routes Their considerable settlements in Southern Spain no doubt introduced a new racial element, which, however, was swallowed up later by the Moorish influx

For some six hundred years the strength of the Roman Empire maintained a stable condition of affairs, but at the end of that time a new wave of migration inundated Western Europe The transrhénish Germanic tribes had as early as 58 B.C. made an effort to invade Gaul, but had been ejected by the Roman armies Gradual penetration and inter-mixture between these Nordic peoples and the inhabitants of Gaul had, however, begun even earlier, and the inhabitants of the North of France and all Belgium seem to have been largely of Nordic stock The new race was tall, fair, and long headed, and was of better physique than either of the other two races Coming from the rigorous climate of the north, they were hardy and practical After their irruption into the Roman provinces, they replaced the local aristocracy, but owing to their comparatively small numbers they were soon absorbed by the people among whom they had established themselves Britain, to which Germanic tribes had migrated *en masse*, formed a notable exception to this, as the new comers entirely displaced the natives in some parts of the island

In the Germanic invasions, the same geographical influences are again seen at work While wholesale migration of tribes was possible to the east of Britain, where physical and climatic conditions were similar to those of their original home in the north and east, these northern tribes could only exist as a ruling class in the more southern lands, and finally became merged in the autochthonous peoples who were more adapted to the climate Hence, the basis of population in Mediterranean regions is still composed of the old Mediterranean race, while outside these regions, in France, Spain, and Belgium, the Nordic influence predominates except in the uplands In Southern Spain, however, a large Moorish element exists, owing to the occupation of the

country by that people between the years 711 and 1492. In the north and east of France and in Belgium there is a large Nordic element, while in the British Isles the Nordic stock prevails in the east and the Alpine in the west. In Scandinavia the Nordic stock is almost pure. Racial purity is seldom or never seen, however, for besides the series of fusions which have occurred from historical causes there has been constant intermingling during modern times.

**History and Politics.**—The break-up of the Roman Empire put Western Europe into the melting-pot. In this chaotic period, the first political divisions recognised were the tribal distinctions of the Germanic invaders. But the traditional hegemony of Rome enabled the popes to conceive the idea of a united Christendom of which they were to be the spiritual head, with an emperor as temporal coadjutor. Magnificent as this conception was, it could never have been realised, for it was opposed by strong geographical forces. England and France, isolated more or less completely by definite frontier lines, were led to develop a sense of nationality. Racial unity and complete isolation produced ideas of nationality and patriotism by 991 in England, for in the contemporary poem on the battle of Maldon fought in that year the poet makes his hero express these notions clearly :

Hēr stynt unforcūþ	eorl mid his werode,
þe wile gealgean	ēþel þysne,
Æþelrēdes eard,	ealdres mīnes,
folc and foldan. <sup>1</sup>	

The Norman Conquest gave a temporary check to these ideas, but by the end of the thirteenth century the English had completely regained their national sense. In France, where isolation was less complete, the full development of national spirit did not express itself in national unity until the end of the fifteenth century.

In the north, geographical causes are also seen at work. Norway, Sweden, and Denmark were peopled by men of the

<sup>1</sup> Here stands undaunted an earl, with his following, who mean to defend this land (the land of Æthelred my lord), this land and people.

same stock and speaking languages whose differences were merely dialectal. Early history shows these peoples broken into small communities by minor features of relief. Every island, every valley formed an independent unit at this stage. Later, the more numerous communities absorbed the less numerous, growing until they reached a major geographical boundary like the Scandinavian Mountains. Thus, by the end of the tenth century the divisions of Denmark, Sweden, and Norway were clearly defined. But the seafaring propensities naturally developed by the coasts of Norway and Denmark produced in the people a spirit of adventure which showed itself in voyages of exploration and in piratical raids. Finally, raids undertaken by kings assumed the character of invasion, and the king of Denmark was able to establish an empire comprising Sweden, Norway, and the greater part of the British Isles. Although this empire was soon broken up, there has been a constant tendency towards political union in the three northern states owing to racial affinity, though at the moment the counter-tendency exerted by the barriers of relief has separated them.

In the south, Spain and Italy have their own problems of unity. Though strongly marked off from her neighbours by the sea or by the Pyrenees, the Iberian Peninsula is divided by internal relief into separate compartments. Partly under the stress of the Moorish wars and partly because the barriers were not everywhere complete, the early kingdoms became united by the middle of the sixteenth century. But the influence of the barriers soon caused the defection of Portugal, and it is still sufficient to maintain separatist tendencies in Cataluña. In Italy similar causes have been at work. The great cohesive tendencies have been due to the barrier of the Alps and the tradition of the Roman Empire, but minor barriers of relief have split the country into sections which have only recently been welded together.

Its development of ideas of nationality distinguished Western Europe from the rest of the continent. In the vast plains of Germany and Russia, the sense of the big social group is lost, while in the tangled relief of the Balkan Peninsula the barriers

separating small areas are too great for any but a well-organised modern government to overcome. In Western Europe, nationalism has been obstructed by the existence of backward areas in the midst of progressive communities. These areas are always *massifs*, like the Meseta of Spain, the Central Highlands of France, and the Vosges, whose unproductive soil and plateau climates have made them regions of difficulty. By process of natural selection, only unprogressive individuals are left in these regions, which therefore clog the general progress. Spain, which has been obliged to place the centre of her political life in this region, suffers particularly from this handicap.

Racial characteristics have played no less a part in the progress of political ideas. The Mediterranean race, though originators of republican ideas, seems incapable of being governed effectively except by some form of autocracy. The constitutional system has in recent times completely broken down, and has been replaced by the ancient dictatorial system in both Italy (Mussolini) and Spain (Primo de Ribera). The troubles in Ireland during the past century may arise from the same causes, though the results of self-government must be awaited before a definite conclusion can be arrived at. The northern people have a steadier political sense, and have developed, among the English in particular, a form of constitutional government which secures the maximum of personal liberty with a maximum of order. The French seem to be transitional between the two, having reached their political zenith under autocracy, but now preferring republican government—which, however, is frequently put out of gear by the failure of the people to understand the exotic system.

Differences in race are not the only causes of these differences in political sense. Climate and relief, which mould the racial character, are important factors. The severe winter of the north breeds hardy men, whose sense of common difficulties leads them to compromise in matters of dispute, and to discountenance any innovation which may interrupt the great struggle with nature. Long stretches of indented coast encourage seafaring, and this in turn fosters an independence of spirit which will not tolerate petty tyranny. In the south, the benevolent climate

renders men less purposeful, and leads them to regard abrupt changes with less suspicion. Life in the open all the year round engenders a love of show and pageantry, such as "battles of flowers" and carnivals, leading to wild excitement, which makes mob psychology a prominent feature in southern politics.

The same causes affect the religious life of the people. In the north, Protestantism holds sway, with its creed and rites based on reason. In the south, Roman Catholicism with its appeal to the emotions and its reliance on authority is predominant. In this also is seen the northerner's independence of spirit, and the southerner's need for strict regulation. Protestantism is the expression of the cold and misty north, Roman Catholicism of the warm, bright south.

No sooner were the national states of Western Europe developed than they began to struggle with each other for political supremacy. Though the causes of these struggles are partly historical—political, religious, or even simply dynastic—they are yet mainly geographical, as can be seen from the objects on account of which they were undertaken. In most cases the frontier lines of Western Europe are imperfect. The Alpine mass is so huge that it forms a poor boundary, for the population of the plains shades off gradually into a mountain people in the high valleys, and the people in the high valleys on either side of the divide have more in common with each other than with the plainsmen of their respective sides. Hence, the frontier line between France and Italy has always been subject to oscillations. The eastern boundary of France is still less secure. The low ridges of the Vosges and Ardennes nowhere form an insuperable barrier, and in any case they are pierced by the gates of Lorraine and Burgundy. Hence, the aim of the Romans was to use the Rhine as the frontier, and this has in modern times been the adopted policy of the French. The main objection to such a frontier is that it cuts through a single geographical region—the Rhine valley—and does not, therefore, lead to stability. The numerous wars between France and Germany in modern times have all been due to an effort by both nations to solve the frontier question.

Similarly, the Scandinavian mountains do not place an effective



political barrier between Norway and Sweden, though differences of climate and relief have developed racial differences on each side of the Peninsula. The mountains themselves are of no great height, but the snow-line is low in these latitudes, and the high ground forms a bleak, inhospitable region often covered with ice and snow. In the north, conditions are sufficiently rigorous to form an effective barrier, cutting Norway off from the rest of Europe ; but a strip of coastal plain and the frozen surface of the Gulf of Bothnia in winter have bred frontier troubles between the Swedes and the Finlanders. The Pyrenees have never freed Spain from French invasion, and a good deal of frontier oscillation has taken place at each end of the range. In the Danish Islands, the sea has proved an effective frontier, but there has been dispute over the southern land boundary of the Jutland Peninsula. The pressure of the Wends from the plain of North Germany seems to have been one of the causes of the migration of the Angles and Saxons to Britain, while the latest solution of the boundary problem was arrived at no longer ago than 1920, when a commission appointed under the terms of the Peace Treaty of 1919 gave a new ruling on the question. The same complete absence of natural frontiers is seen in Northern France, Holland, and Belgium. The constant wars resulting from this have led to the establishment of Belgium and Luxemburg as buffer states with boundaries guaranteed by the nations concerned. This device did not save Belgium from invasion during the war of 1914-18.

Man's increasing ability to overcome the difficulties of his environment has resulted in the shifting of the focus of civilisation. In early days, the growth of civilisation required specially favoured surroundings : a fertile valley like that of the Nile or the smaller sheltered valleys of Greece. But with the increase of command over nature, the focus has gradually moved north and west to countries with a more vigorous climate. Thus, Greece was succeeded by Rome, which was supplanted by Paris. After a couple of centuries of pre-eminence Paris was supplanted by London. This movement, which has been termed the northward trend of empire, is based principally on

climate, but economic forces have also played their part. It remains for the future to prove whether a new centre will be found in Canada or, if economic forces prevail, in the United States.

**Exploration**—Such a development would in no way be fatal to Western civilisation, for it would merely transfer the focus from one part to another of the domains of the Western European. No sooner had the nations achieved their unity than they began to take an interest in the extra-European world. In this the lead was taken by Spain and Portugal, because the position of those countries made it particularly easy to become familiar with the trade winds. The voyages of Columbus were not so wonderful as the promptness of Spain in taking advantage of his discoveries. This was due to the historical accident of the presence in Spain of large numbers of soldiers of fortune whose occupation had ended with the expulsion of the Moors. These men flocked to America, conquered large tracts of country, and settled wherever they found a climate similar to their own. The Portuguese, who had no such surplus energy to vent, failed to follow up the advantages accruing from the voyage of Vasco da Gama. However, they managed to avail themselves to a certain extent of Cabral's chance discovery of Brazil, thus securing a large share of Latin-America.

These first explorers were immediately followed by the English and French. Neither of these nations was ready for expansion, and Cabot's voyage to Newfoundland was long fruitless. The wealth brought back from the Indies by the Spaniards roused in the seafaring elements in England a spirit of adventure which has continued from the last quarter of the sixteenth century to the present day. Drake's voyage of circumnavigation, the attempts of Frobisher and Hudson to find the North-west Passage, and Cook's discoveries in the Pacific stand out among innumerable lesser facts. Land explorers took up the work, and in the nineteenth century Mungo Park, Burton, Speke, and Livingstone laid bare the mysteries of Africa, while Burke and Wills solved the problem of the interior of Australia.

Meanwhile, other nations had entered the field. First, the

Dutch explored the East Indies and Australasia, chiefly through the efforts of Tasman. In recent years the Norwegians have played a leading part in polar exploration, Amundsen being the first to reach the South Pole. Americans too have joined in what has now become scientific, rather than adventurous, exploration, and Peary was the first to reach the North Pole. This insatiable desire to explore every corner of the earth has taken the Western European everywhere, and the areas still marked on maps as unexplored are now very small.

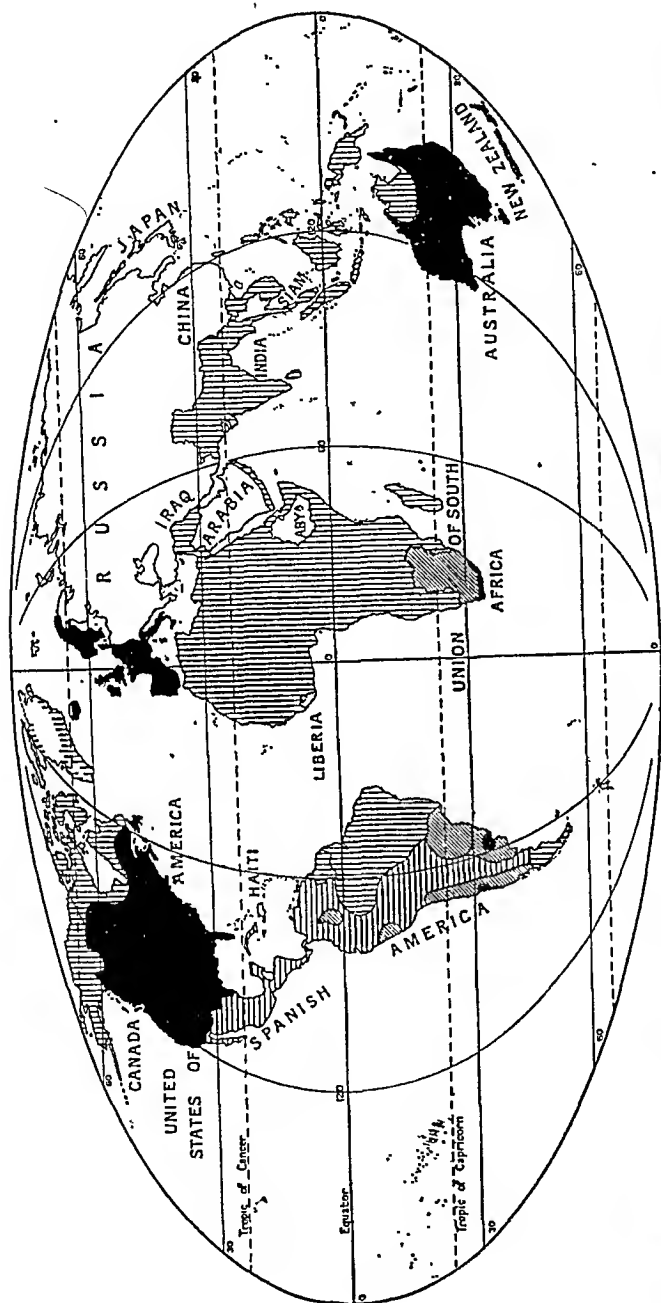
**Colonial Expansion and the Rise of Industrialism.**—The footsteps of the explorer have usually been followed by the trader and the settler. Early in the seventeenth century, parties of English and French began to settle in parts of America where the climate was most like that of their homeland. The insecurity of the frontiers of France caused the efforts of the French to be less vigorous than those of the English, and during the wars of the eighteenth century the latter availed themselves of their greater seafaring skill, bestowed upon them by their island home, to acquire supremacy on the seas and to deprive the French of their colonies. At the same time the English were by similar means securing the monopoly of trade with India. The climate of that vast peninsula does not encourage the settlement of Europeans, but the country is rich, and trading posts soon established a profitable business. The Portuguese and Dutch rivals were disposed of by superior naval force, and to strengthen their commercial position further the English assumed the government of the country.

Trade with India encouraged manufacture in England, and the growing colonies in America soon began to form a considerable market also. In return for manufactured goods, India supplied spices, precious metals, and "luxury goods," while America produced raw materials which enabled the output of English manufactured goods to be greater and cheaper than before, and also gave rise to the production of cotton goods. The rising demands of the market called forth the invention of machines by which the output could be still further increased, and the mineral wealth of the country began to be exploited. The

mechanisation of industry caused a revolution in methods of production, trade, and transport, and even in mode of life. One invention led to another, and the demand for raw material caused the exploitation of productive tropical lands populated by small numbers of backward peoples. This movement led to the occupation of large tracts of land, forming what are called under the English colonial system "crown colonies," to distinguish them from the lands in which English settlers made permanent homes. U.S F8

The steady expansion of British trade and territory was made possible by two geographical facts: the presence of coal and iron as said above, and the insular character of their country, which enabled its people to concentrate on trade and commerce, and gave it command of the seas. While the continental nations destroyed each other's resources and energy in war, England was able to stand aloof in safety from European entanglements and foster her trade and commerce, while by her naval supremacy she acquired the foreign possessions of her rivals. When France and other Western European nations began to follow her industrial lead after the settlement following on the Napoleonic wars, she had already gained a considerable start in the development of trade, in the acquisition of territory, and in overseas transport. Other nations joined in the "scramble for Africa," and France and Italy established themselves in North Africa, where the Mediterranean climate prevails. But the long start gained kept England well ahead of her rivals until the beginning of the war of 1914, when she was the wealthiest nation in the world and had the greatest trade and commerce. During that war, she followed her old principles of seizing foreign possessions overseas, but much of her lead has been lost to the United States, which stood aside and profited by the war, as England had done a century before. 20802

In the race for wealth through raw materials, European civilisation has spread nearly all over the world. Practically the whole of Africa, all America and Australia, and a large part of Asia have come under the sway of the Western European and are being systematically exploited by him. Equatorial forests



■ Occupied by Western Europeans  
 ▨ Inhabited by races of partly W. European descent  
 ▤ Controlled and largely settled by W. Europeans  
 ▦ Controlled but sparsely peopled by W. Europeans

FIG. 8.—AREAS CONTROLLED BY WESTERN EUROPEANS OR THEIR DESCENDANTS.

Showing the predominant world influence of the Western European.

produce rubber and cabinet woods, temperate forests timber and furs, grass lands yield cereals, cotton, meat, and wool, while special areas give sugar, tea, cocoa, coffee, tobacco. In many of the overseas possessions the Western European cannot live permanently, he cannot even work with his hands. The native races provide the labour and the white immigrants supervise their work. In the track of the planter and the trader follow the missionary, the doctor, and the teacher, who are the special emissaries of Western civilisation. The reaction of native peoples to that civilisation differs with various races. In some cases, e.g. the North American Indian, the native has proved incapable of adapting himself to it and has died away before its spreading flood, in others, e.g. the African Negro, the introduction of civilisation has resulted in an uplifting of the native, who certainly thrives amid its surroundings.

Meanwhile, nearly the whole of Western Europe has become industrialised. The coalfields situated on the edge of the great plain have become areas of dense population, with satellite towns and villages so thickly clustered about the focal town as to form conurbations. In such districts, land is too valuable to be used for agriculture, and food has to be brought from elsewhere. Sometimes, as in France, the non-industrial areas are capable of feeding the industrial by adopting a system of intensive cultivation, at others, as in England, they are incapable of doing so, and food has to be imported from abroad in large quantities. Round the conurbations special forms of horticulture replace agriculture in order to supply the town with certain perishable requirements, as market vegetables, flowers, etc. The artificial life in such towns leads to much regulation of traffic, sanitation, housing, amusement, etc., while the congregation of vast numbers of workers has caused the formation of trade unions which have acquired great political power.

Coal, the mainspring of these industrial centres, is bound to be exhausted sooner or later, and the conurbations will then presumably wither away as rapidly as they sprang up, unless they are saved by the intervention of some new factor. In view of the future failure of the coal supply, other forms of power

have been exploited. The only really successful one is hydro-electricity, produced by the force of waterfalls and mountain streams. Its development is limited to upland regions and their immediate neighbourhood, and already there are signs of its extensive use in parts of France, Italy, and Norway. In some places where abnormally high tides exist, the use of the tide for the production of hydro-electric power has been suggested, but so far the matter has not passed beyond the experimental stage. The use of oil as fuel has caused further energetic steps to be taken by the Western Europeans to secure foreign possessions which yield this desirable mineral.

The rapid expansion of industry, which depends on the existence of markets, cannot continue for ever, especially as most of the best markets for manufactured goods have begun to establish their own producing centres and to supply their own needs. Realising this, economists imagined before the war of 1914-18 a final stage of industry in which a regular exchange took place of the manufactured goods of temperate regions and raw material of the hot countries. But, although amid the many needs of Western civilisation no country is likely to be self-sufficing, the awakening of the coloured races and their threatened revolt against Western hegemony seem to have disposed of this splendid conception.

The industrialisation of Western Europe has centralised the population in a few big towns. Three chief types of these may be distinguished. (1) The industrial conurbation already mentioned, of which Birmingham seems to be the best example; the great seaport, of which Hamburg and Marseille are typical; and the great regional centres of politics and high commerce and finance, like London and Paris. The last owe their importance fundamentally to their central position and facilities for radial communication, though they all possess other great advantages as well. Their status is ensured by the network of railways which centre upon them, but whether they will retain their present importance after railways have been superseded by road and air transport remains to be seen. Forming the heart of the country, they are the seat of government and centre of learning,

art, and literature, fashion and society London and Paris, the chief of them, are, indeed, the great centres of Western civilisation

Western civilisation is not the product of a single nation History teaches that isolated peoples, like the Mexicans and Peruvians, cannot go beyond a certain point in the progress of ideas This is due to causes analogous to those which are seen at work biologically in the decay of a race through excessive interbreeding Evolved first in the great river-valleys of the Mediterranean region, Western civilisation owed its continued growth to the fact that a fresh people was always ready to take up and carry on the advance as soon as the energy of previous races flagged This was due to geographical causes, which, while providing sheltered areas in which civilisation might be nursed in its childhood, did not isolate those areas, but on the contrary afforded in the Mediterranean a ready path for the dissemination of ideas The presence of a series of peoples maturing at successive periods owing to climatic causes provided a ladder for the rise of civilisation Brought westwards by the Greeks and Phœnicians, Western civilisation became focused in Rome, where the great natural routes through the Rhone valley and the Gate of Carcassonne led it north west Here it came in contact for the first time with non-Mediterranean man

! Perhaps the distinguishing feature of Western civilisation is its initiative spirit It has been said that it was in Western Europe that man first understood and controlled his environment Certainly, there is something very different in Western civilisation from those of Asia and America, in its expansion, its restlessness, and its curiosity This is perhaps largely due to the variety of surface and coastal features, of climate and geology, together with the natural ease of, and inducement to, intercommunication that exists in Western Europe Instead of specialising himself to particular conditions, the Western European has been forced to become adaptive, and biology teaches that adaptability leads to progress, while specialisation checks further advance In this varied region, the three races have mingled, helped each other, and at times have dragged or driven each other up the



ladder of civilisation. In this task, the contributions of each race are difficult to isolate, but those of the Mediterranean people are most evident. Receiving from more eastern peoples ideas of religion, art, literature, and culture, the Romans, the first great Western Europeans, added and developed the notions of legislation, administration, and road-making in the highest sense. The effects of the contributions of the Nordic and Alpine peoples are incalculable, but the introduction of constitutional forms of government, the modified form of Christianity known as Protestantism, and modern industrialism are certainly due to the former people.

**Learning and Culture.**—Although industrialism has been the mainspring of Western civilisation during the past century, it has not killed all learning and culture. In fact, it has encouraged science to an extent unknown before, and learning flourishes at the great universities of Oxford, Cambridge, London, and Paris, to which flock many thousands of students annually from all parts of the world. Industrialism seems, however, to have had a damaging effect on art and literature, for no great works have been produced since the system has permeated civilisation. Nevertheless, Western Europe has in modern times given birth to works of art and literature second to none in quality and far surpassing the achievements of other times and civilisations in variety and quantity. France and Italy have had great musicians and composers; Italy, Spain, France, Holland, Belgium, and England have all contributed great painters; while Italy, Spain and England have produced in Dante, Cervantes, and Shakespeare three of the world's greatest writers. Geographical influence is not unfelt even in these productions, for the opposing schools of romanticism and classicism are caused by the same agencies as Protestantism and Roman Catholicism, while Pre-Raphaelitism is romanticism applied to a different field.

The influence of Western civilisation is most evident in fashions and manners, and the focus of that civilisation is best indicated by the imitation of its dress and behaviour. In the sixteenth century, Western Europe aped Italian fashions and manners. Then succeeded a period when Paris dictated the fashions, and,

though this pre-eminence has long since passed to London, there still remains a respect for Paris fashions that are really designed in London. Throughout the world there is a tendency to discard local costume and to imitate English dress, even when it is ludicrously unsuited to the climate. It is the same with manners everywhere the Western European, and particularly the Englishman, is the model which others strive to imitate.

**Language**—Along with fashions and manners, Western European languages are assuming a predominance everywhere. A considerable proportion of the world's population speak English as their mother tongue, while the number of non-Europeans who speak it is very large. For instance, a high standard of fluency in English is compulsory in the commissioned ranks of the Japanese Navy. Spanish is the language of most of America south of the United States, while French is widespread in North Africa.

The languages of Western Europe belong to two principal groups, the Germanic and the neo-Latin. Apart from these, there is the Basque of a small area in Spain, the Celtic dialects spoken in Brittany and in some parts of the British Isles, and some non-Aryan languages among the Lapps of Norway and Sweden. Though interesting survivals, they are of no importance. Of the two main groups, Germanic languages are spoken by the northern peoples, and it is remarkable that in Western Europe the Germanic-speaking area coincides roughly with the extension of Protestantism and the more successful forms of constitutional government. To this group belong the Scandinavian tongues, Dutch, German, and English, though the last contains a large vocabulary of "learned" words derived from Latin. Among the southern nations, the neo-Latin group prevails, including French, Spanish, Portuguese, and Italian. Both groups are fully developed and form admirable instruments for expression. Originally, they were derived from a common stock and belong to the Aryan family of languages.

Difference of language has long been felt to be a handicap to progress, and smaller nations like the Dutch and Danes are often

obliged to become familiar with one or two foreign tongues either for commercial or professional purposes. Moreover, difference of language and the consequent difficulty of appreciating each other's point of view have doubtless accounted for much misunderstanding among the nations of Western Europe. Hence, efforts have been made to invent an artificial universal language. In the Middle Ages, Latin survived in a "canine" form as an international language, but it died out with the rise of great modern literatures, remaining as an interesting survival in the curricula of schools. Its place was taken by French, as France was then the leading nation, and this language became the recognised official international language. It held that position till the war of 1914-18, since when English has been recognised as at least co-equal with French, international documents being drawn up in English alone or in both French and English.

**Communication.**—The extension of Western trade and civilisation has moved along a number of natural routes. Perhaps European expansion has been aided by the position of the region in the centre of the land hemisphere. West and south, the Atlantic is crossed by great lanes of traffic. The chief of these leads to the eastern ports of North America, the necessity for great circle sailing making the trans-oceanic passage the same for all ports from the Gulf of St. Lawrence to Georgia. A continuation of this route overland to Vancouver or San Francisco and thence across the Pacific via Hawaii and Fiji gives the shortest mail-and-passenger route to New Zealand and Eastern Australia. South-westwards runs the route to the West Indies, and through the Panama Canal to the west coast of South America and to New Zealand. Southwards is the route to the east coast of South America and to West and South Africa, continuing thence to Australia. Eastwards through the Mediterranean and the Suez Canal passes the route to India and the Far East.

These are all sea routes. But overland several great railways complete the radial lines of communication. The North-South Express runs from Lisbon through Paris and Berlin to Leningrad, whence it is continued by the trans-Siberian railway to the Pacific shores of China. The Orient Express, starting from

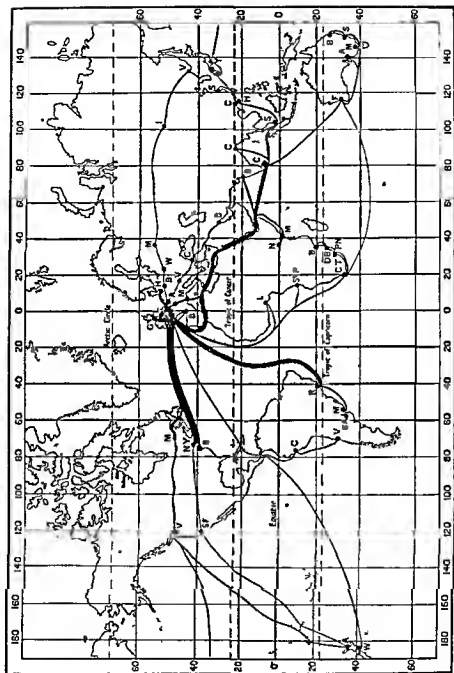


FIG. 9.—MAIN TRADE ROUTES OF THE WORLD  
Showing Western Europe as the focus of the system

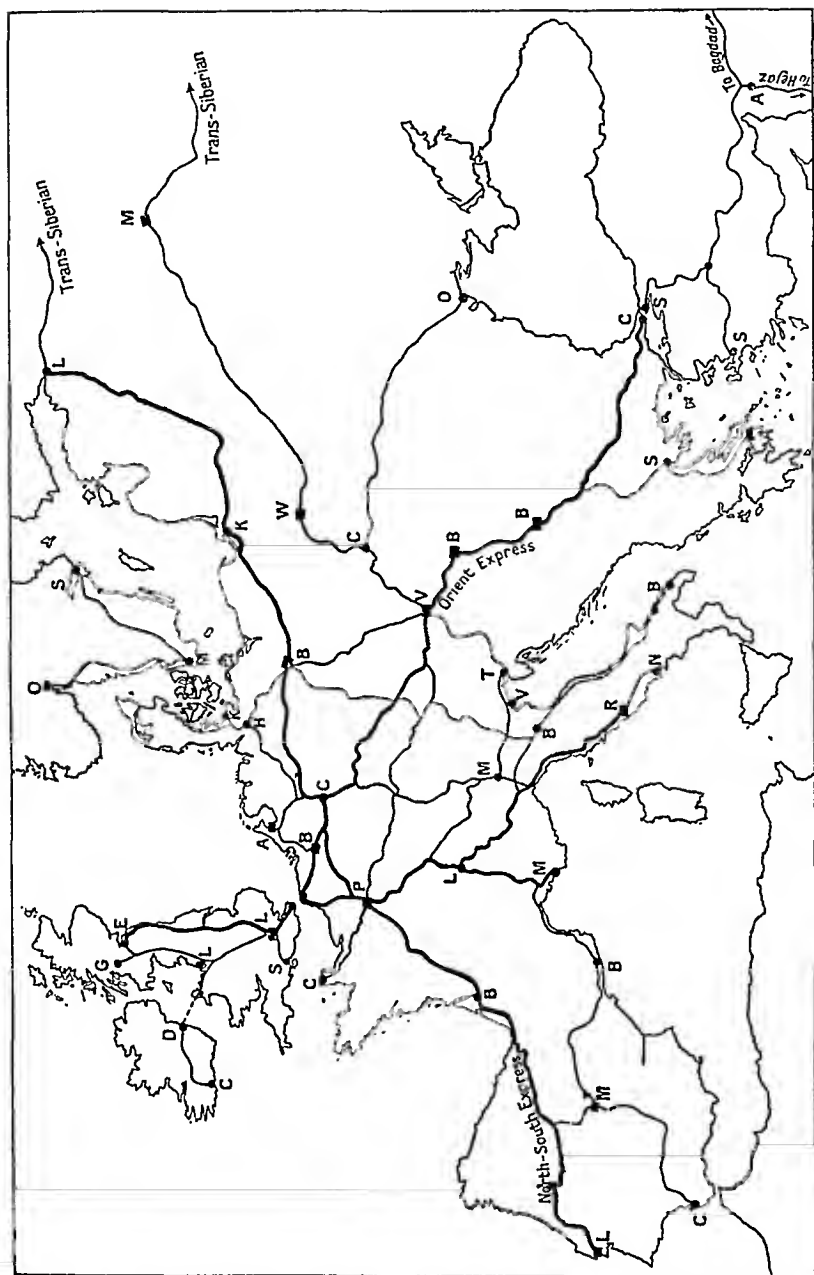


Fig. 10.—MAIN INTERNATIONAL RAILWAYS OF WESTERN EUROPE.  
The three chief lines are thickened.

London, runs through Paris and Budapest to Constantinople, whence it is continued by the Bagdad railway to the Persian Gulf. Since 1918 regular air routes have gradually been established connecting the capitals of Western Europe, and some go even beyond. A regular passenger-and-mail service runs between London and Berlin, accomplishing the journey in seven hours under normal conditions. The greatest venture yet undertaken, however, is the establishment of a regular service to India—London—Cairo—Bagdad—Bombay. So far the middle section alone approaches regularity of service.

E. D. I.

## CHAPTER II

### FRANCE

**Structure.**—Sea girt on the north and west and partially so on the south, France forms a broad bridge connecting the continental mass of Europe with the semi-continental mass of the Iberian Peninsula. On the eastern side, by which she is joined to the continent, the mountain wall is pierced by several gaps. The Rhone-Saône valley between the Alps and the Cévennes leads not only right into the heart of France, but also to Switzerland; the Burgundian Gate, between the Jura and the Vosges, gives access to Southern Germany and to the Danube valley; an easy route leads from Nancy to Strasbourg, whilst the Moselle valley provides a way to Coblenz and the Middle Rhine.

At the end of the Primary period there rose up a massive chain of mountains known as the Hercynian Chain. Fragments of this mass still remain in the Central Highlands of France, the Highlands of Brittany, Cornwall, and Devon, and South-west Ireland. In time portions of the Hercynian Chain sank, and what is now known as the Paris Basin and the Basin of Aquitaine became arms of the sea connected by the Strait of Poitou.

During the Tertiary period, fresh wrinklings of the earth's crust produced the folded mountains of the Alps, the Pyrenees, and the Jura. By this time the Central Highlands had been worn down to a peneplain and had become consolidated. It was again uplifted, and formed a mass of block mountains, having a general tilt from south-west to north-east, and separated from the Alpine folds by the Rhone-Saône depression. This movement was the beginning of a great period of volcanic activity, and it continued long after the foldings which produced the Pyrenees, the Western Alps, and the Jura had ceased. Nowhere else in Europe can the results of former volcanic activity be better studied than in the central part of the Auvergne Plateau.

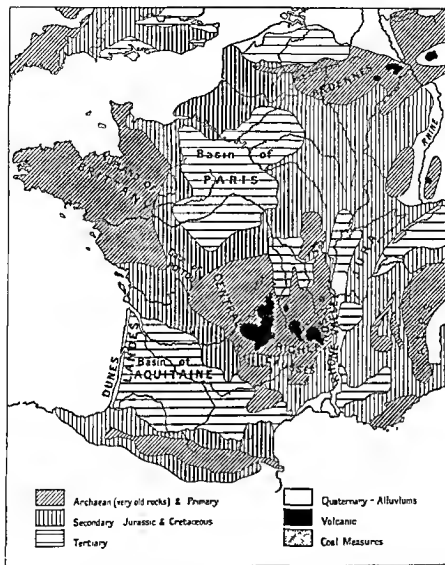


FIG. 11.—SIMPLIFIED GEOLOGICAL MAP OF FRANCE

Note how the three great plains, the Paris Basin, the Basin of Aquitaine, and the valley of the Rhone and Saône—are grouped round the ancient rocks which form the Central Highlands. These three lowland areas were originally formed by the sinking of portions of the Hercynian system, of which the Ardennes, Vosges, Black Forest, Central Highlands, and the Uplands of Brittany are remaining fragments. The fold mountains of the Pyrenees, Alps, and Jura are more recent, having been formed during the Tertiary period.



Before the rift valley of the Middle Rhine was formed, the highland region extended to the west. This region, during a period of uplift, became weakened at its crest; and then, when the great Alpine uplift of the Tertiary period occurred, this weakened crest subsided and formed what is now known as the rift valley of the Rhine. The block mountains of the Vosges and the Black Forest were left standing on either side of the broad valley. The Vosges consist of rocks of different ages including limestones, slates, and sandstones.

On the north-east the depression known as the Paris Basin is separated by the low hills of Artois from Flanders; on the west it is bordered by the waters of the English Channel and by the highlands of Brittany; on the south the Central Highlands form part of its boundary, whilst on the east it is enclosed by uplands stretching from Morvan to the Ardennes. The latter consist for the most part of primary rocks worn down to a peneplain.

The Paris Basin may be compared to a nest of saucers, set one inside the other, with the biggest at the base and the smallest in the centre. From the inner saucer there will be a gentle slope upwards towards the rim and then a drop to the next saucer, which will, in its turn, rise up towards the circumference until it drops to the saucer beneath. Thus in the Paris Basin the successive strata rise up by low gentle slopes from the centre of the basin to the outer edges, when they fall, by steep escarpments, to the succeeding strata. (See Fig. 18.)

At one time the basin was an arm of the sea which covered sunken older rocks. Successive inroads of the waters laid down a variety of deposits on the floor of the basin. By the beginning of the Tertiary period this sea had become filled up, and there was left in the centre a large lake known as the Lake of Beauce. During the latter part of the Tertiary period, this lake, too, was filled by deposits, and it is now floored with limestones which are partially covered with a sheet of fertile loam. On the outer margins of the Paris Basin, from which the sea first retreated, Jurassic rocks occur. These are succeeded by younger layers of chalk, whilst in the centre of the basin, in the regions nearer Paris, are found more recent gravels, clays, and sandstones.

Towards the west the Jurassic belt is broken by the sea, and here, in the east of Normandy, are found the chalk lands of the second ring of rocks which bound the basin. This chalk belt is continued north-eastwards into Picardy, where, as in Normandy, the chalk is largely covered with layers of sand, clay, or fertile loam.

In Champagne, which lies between the Jurassic scarplands of the Upper Meuse and the central part of the Paris Basin, two regions may be distinguished

(1) The undulating chalk lands of Dry Champagne (Champagne Poulleuse)

(2) The clay plains of Wet Champagne (Champagne Humide)

In Dry Champagne, the fertile loam covering is for the most part absent. On the west of this district rise up the sharp slopes of the Falaise de l'Île de France. These scarplands stretch in a wide semi-circle, convex to the south east, from a point west of the junction of the Seine and the Yonne to beyond Reims.

Between Picardy and Champagne lies a region which presents a distinct contrast to these adjoining uplands. This area comprises the districts of Valois, Soissonnais, and Laonnais. Here the chalk lies buried at great depths, whilst more recent rocks cover the surface. They include limestones of various ages as well as sands and clays. There is a general upward slope towards the north east, where some older rocks appear near the surface.

To the east of Paris, lying between the Marne and the Seine, is Brie. Extensive portions of this district are covered with a heavy clay surface soil. South of Paris, in Hurepoix, the limestone is covered with more recent sands and clays. Beyond the Beauce district, which has already been mentioned, lie the districts round the Loire. In comparatively recent geological times, the waters of the sea, coming from the west, penetrated almost to Blois and the streams which now converge on Touraine once emptied their waters into this gulf. Between the Loire and the Central Highlands lies Nivernais, across which narrow bands of clay, granites, and limestones run from north to south. The soil of Orleanais resembles that of Beauce, and presents a great contrast to the poor sandy and clay soils of the neighbouring

region of Sologne. In Touraine, the chalk uplands lack the fertile loam covering and thus present a great contrast to the valleys. Westwards the Lower Loire traverses the southern portion of the uplands of Brittany, a region of granites, schists, and sandstones. North and south, plateaus border the basins of Châteaulin and Rennes, whilst higher ground separates them from each other. The former basin occupies the bed of a Tertiary lake, whilst the latter was already worn down when the sea invaded it in the middle of the Tertiary period. The waters left behind them the deposits of sands and clays with which the basin is now flooded.

The Basin of Aquitaine, which is more uniform than that of Paris, is flooded by Tertiary beds consisting of limestones, gravels, sands, clays. In parts it is covered by more recent alluvium brought down by the rivers from the upland regions. The rocks were either deposited on the beds of the ancient seas which once invaded the basin or on the beds of lakes. A line of limestone rocks, running from a point somewhat south of Cahors and through Périgueux to Santes, may be taken as marking the northern edge of the Basin of Aquitaine. In parts the plain touches the Central Highlands, and in parts belts of limestone and chalk are interposed between the plain and the latter region. Southwards the folded mountains of the Pyrenees, consisting chiefly of a long series of limestone ridges intersected by bands of granites and slates, rise up steeply from the plain, the slopes forming a sharp contrast to the more gentle ones of the Spanish side.

Between the uplands of Brittany and those of the Central Highlands, the Strait or Gate of Poitou forms the connecting link between the basins of Aquitaine and of Paris. It represents a sunken portion of the Hercynian Chain. During the Mesozoic age, this strait formed a narrow opening connecting the seas which covered the two basins; but by the beginning of the Tertiary period the waters had receded, leaving behind them the limestones which now form a thin covering over the underlying older rocks.

**Relief.**—Apart from the French Alps, which contain the highest peak in Europe, Mont Blanc, France contains no mountains of

any great altitude. More than half the country has an elevation of less than 650 feet. The highest mountain masses are the Pyrenees, the Alps, the Jura, the Vosges, and the Central Highlands. Of these only the last lie in the centre of the country, the rest being on her borders.

The Central Highlands, stretching from the Plan of Aquitaine to the Rhone-Saône depression, may be regarded as the heart of France. In the south-east, it is separated by the Gate of Carcassonne from the Pyrenees, whilst in the north a group of uplands of varying height connect it with the Vosges and the Plateau of Lorraine. The Cévennes form its steep eastern wall, whilst on the west lower ridges of hills running from Castre to Briève mark the boundary. The northern slope is more gradual, yet the nature of the soils and the resulting differences of vegetation make the distinction between plateau and plain a very marked one.

The limestone regions of the southern portion of the Highlands, the Causses, lie between 2,500 and 3,700 feet above sea-level. Here rises the Tarn, with its wonderful limestone gorge, some thirty miles in length. Northwards the Causses are succeeded by a region where volcanic activity was very marked. Three main volcanic areas may be noted.

(1) The Velay region, lying between the upper courses of the Loire and the Allier.

(2) The Cantal region, which stretches northwards from a line drawn from St. Fleur, on the west, to Aurillac, on the east.

(3) The region of the Chaîne des Puys and the plains of Limagne and Forez.

One of the outstanding cones in the Velay region, the Mézenc, rises up from the underlying granite plateau to a height of 5,700 feet. This cone, with its two sharply defined peaks, is only the remains of a once far greater volcano. Near the foot of the cone rise the headwaters of the Loire.

In the Cantal district, volcanic activity commenced at a very early period. A time of rest was followed by a terrific outburst, during which the Plomb du Cantal was formed. The base of the present volcano is more than forty miles in circumference.

During the Quaternary period, glaciers eroded the sides of the mountain, but their action was not strong enough to destroy its general outline.

West of the Allier and north of the Cantal region the *Monts Dômes* culminate in the *Puy de Dôme* (4,805 feet). The height of this peak is, however, exceeded by that of the *Puy de Sancy*, in the *Mont Dore* group, which lie between the Cantal and the *Monts Dômes*. The plains of *Limagne* and *Forez*, the one crossed by the Allier and the other by the Loire, both occupy the beds of the old Tertiary lakes.

Westwards of the *Monts Dômes* the granite plateau of the *Millevaches*, a region of alternating plains and ridges, sinks through *Limousin* to the plains below. Northwards, in *Morvan*, the granite uplands are gradually replaced by a limestone district, across which the waters of the *Yonne* and its tributaries have cut deep valleys as they rushed along, laden with sediment, to the plains below.

Forming the southern boundary of the Basin of Aquitaine, the Pyrenees have an average elevation of from 6,500 to 10,000 feet. On the Spanish side they sink gradually by a series of plateaus, but the steep slopes of the French side are cut up by deep valleys, down which the rivers flow in an alternate series of gorges and basins. The Pyrenees may be divided into three regions :

- (1) The Western Pyrenees.
- (2) The Central or High Pyrenees.
- (3) The Eastern Pyrenees.

The Western Pyrenees, which have a general trend from north-west to south-east, are lower than the Central portion of the chain. The latter ranges form the highest and broadest parts of the mountains. In parts glaciers are still to be found. The *Cirque of Garvanie* is one of the best-known examples of this kind of formation in the glacial districts of the Pyrenees. From its flat-bottomed floor rise up, on three sides, steep limestone walls whose slopes are covered with perpetual snow. The waters, fed by glaciers, descend in a series of magnificent cascades.

These cirques, the U-shaped, overdeepened valleys, and the alternation of long gradual and short sharp slopes, which one traverses in ascending a main valley, testify to the former and present action of ice. The Eastern Pyrenees, like the Western ranges, are lower than the Central chain.

Forming the eastern wall of the Rhone valley, the French Alps rise up much more steeply from the Italian than they do from the French side. In the latter region, the main chains are bordered by lower ranges (the Prealps), whilst between the different ranges broad, longitudinal valleys run from north to south. Between these main valleys, connecting transverse ones facilitate communication between east and west. A good example of these types of valleys is seen in the valley of the Isère. From Grenoble the main valley, the Gresivaudan, runs northwards, but some distance up this valley a tributary stream, the Arc, leads by means of a transverse valley, the Maurienne, up to the Mont Cenis Pass.

The Alps may be divided into

- (1) The Alps of Savoy in the north
- (2) The Alps of Dauphine in the centre
- (3) The Alps of Provence in the south

The Jura, though of lower elevation than the Alps, may be regarded as their northern prolongation. Here, too, we get a series of alpine folds separated by broad longitudinal valleys, between which communication is established by means of transverse river gaps known as *chuses*. As in the French Alps, the western slope is more gentle than the eastern one.

Separated by the gap of the Burgundian Gate from the Jura, the Vosges are of no great elevation. The passes across them are, like those of the Pyrenees, high and rather difficult. The main routes run, therefore, round the ends of the mountains. The Plain of Alsace, lying between the Vosges and the Rhine, is crossed from south to north by the Ill. Lorraine, to the west of the Vosges, is traversed by the Moselle and the Meuse. In its middle course, the latter river cuts its way in a steep, narrow valley across the western corner of the Ardennes.

The structure of the basins of Paris and Aquitaine has already been described. The total area of the former is about one-quarter of that of France. It includes practically the whole of the basin of the Seine, as well as that of the Somme and other smaller streams in the north-west.

In the latter portion of the basin, the general trend of the hills and valleys is from north-west to south-east. The hills of Artois and Boulonnais alternate with the valley of the Somme, north of which rises up the Pays de Bray. South-west of the latter is the winding clay valley of the Lower Seine, and beyond it is the chalk tableland of Central Normandy. This tableland slopes up to the Collines de Normandie and the Collines du Perche. The rivers Risle, Touques, Orne, and other streams flow across this region in clay-bottomed valleys. Northwards the latter river crosses the limestone Campagne de Caen.

In the eastern part of the basin are a series of hills stretching in a semi-circle, convex to the south-east, with their steep scarps facing this direction and their long gradual slopes towards Paris. The most important of these scarps are the Falaise de l'Ile de France, the Côtes de Champagne, the Côte des Bars, and the hills of Argonne, the Côtes de Meuse and the Côtes de Moselle.

With the exception of the Adour, in the south-west, the rivers flowing into the Gironde estuary take the entire drainage of the Basin of Aquitaine. The Garonne, rising in the Pyrenees, runs north-west to Toulouse, whence it traverses the plain in a north-westerly direction. The river receives the waters of nearly all the streams rising in the mountain areas which border the plain. After leaving the clay plain of Toulousain the Garonne flows across the limestone district of Agenais. The chalk and limestone terraces, which stretch from Lauraguais to Périgord, are cut by the Tarn, the Lot, the Dordogne, and other smaller streams. Between the foot of the Pyrenees and the Adour lies an upland region which is composed of glacial debris. This is the Plateau of Lannemezan. Northwards from the Adour the sandy district known as the Landes stretches towards the Gironde estuary. Its long straight coast is bordered by sand dunes.

**Climate.**—Most of France, apart from the Mediterranean

regions, lies in the track of the prevailing south-westerly winds. Lying between  $43^{\circ}$  N and  $50^{\circ}$  N, it has, on the whole, a temperate climate.

As in the British Isles, temperature increases in summer from north to south, but in winter it decreases from west to east. The main causes may be briefly summarised as follows.

In summer, the rays of the sun shine down much more directly in the south than they do in the north, and therefore the south is warmer. At the same time the sea has a slight cooling effect, and places near the sea tend to be cooler than places inland. Land heats much more quickly than water, and the farther a place is from the sea the hotter it gets. In summer, the isotherms run roughly from east to west, but owing to the fact that the coastal regions are cooled the isothermal lines bend southwards on approaching the coast. The isotherm for  $64^{\circ}$  F follows the north and west coasts. In winter, the chief factor affecting climate is the fact that the land has cooled more rapidly than the sea, which has, to a certain degree, retained its heat. The sun's rays, though still, of course, more direct in the south than in the north, have little effect. The comparatively warm winds coming from the Atlantic have a moderating influence on the west and, in a lesser degree, on the north coasts. Thus the isotherms run from north to south, but owing to the mild winters of the Mediterranean regions the isothermal lines bend eastwards across the Plain of Aquitaine and run parallel to the south coast. Thus the isotherm for  $40^{\circ}$  F runs east of the Cotentin Peninsula and across the Lower Loire, when it turns south-east and passes near the mouth of the Rhone.

Apart from the highlands of Brittany, in the west, and the Pyrenees, in the south, the upland districts of France lie in the centre and in the east. There is, therefore, a fairly heavy rainfall in the west, with a somewhat greater amount in Brittany and in the districts lying at the south-western foot of the Pyrenees than there is in the Paris Basin and in that of Aquitaine. Of the two latter regions the former has a slightly less rainfall, owing to the presence of the highlands of Brittany to the north-west. The region of greatest rainfall is the Central Highlands, especially



on the higher western slopes—that is to say, those facing the prevailing winds.

We may distinguish the following climatic zones :

(1) The western region with moderately cool summers and mild winters, i.e. a typical maritime climate. The temperature increases southwards in the Basin of Aquitaine, and at the same time the rainfall decreases until the south-western foot of the Pyrenees is reached. The driest belt is the coastal zone between the estuary of the Loire and that of the Gironde. As the land rises inland the rainfall increases slightly. There is also considerably more sunshine in Aquitaine than there is in Northern Brittany, for the cloudy area, which often stretches from Newfoundland to the English Channel, is apt to envelop the Channel shores of Brittany.

(2) The Central Belt, excluding the more mountainous portions, which has a very modified form of Continental climate. The summers are warmer than those of the west, but the winters are considerably cooler.

(3) The mountainous regions with hot summers, a prolonged autumnal period, and severe winters with abundant snow. There are frequent rain-storms in summer and, in parts, in autumn. There is a marked difference in both temperature and rainfall between the windward and the leeward slopes. In the Auvergne, the westerly slopes, such as Limousin, receive considerably more rain than the easterly ones, and at the same time the climate of the former is less extreme. In the Western Pyrenees, owing to the north-west to south-east trend of the ranges, the valleys are exposed to the moisture-laden winds from the Atlantic. Thus this side of the range has a very much greater rainfall than the Spanish side.

(4) The Mediterranean Region.—This part of France has the typical climate associated with such regions. The winters are mild and the summers are extremely hot. Owing to the fact that the Mediterranean is practically land-locked, the cooling influence of the sea is not very great. In winter, these lands lie in the belt of south-westerly winds, owing to the shifting of the wind belts to the south. In summer, however, when the wind belts

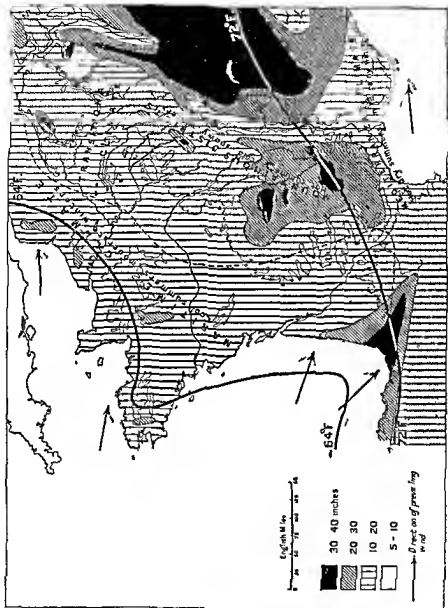


FIG 12.—CLIMATE OF FRANCE  
Summer conditions (May 1 to Oct 31)

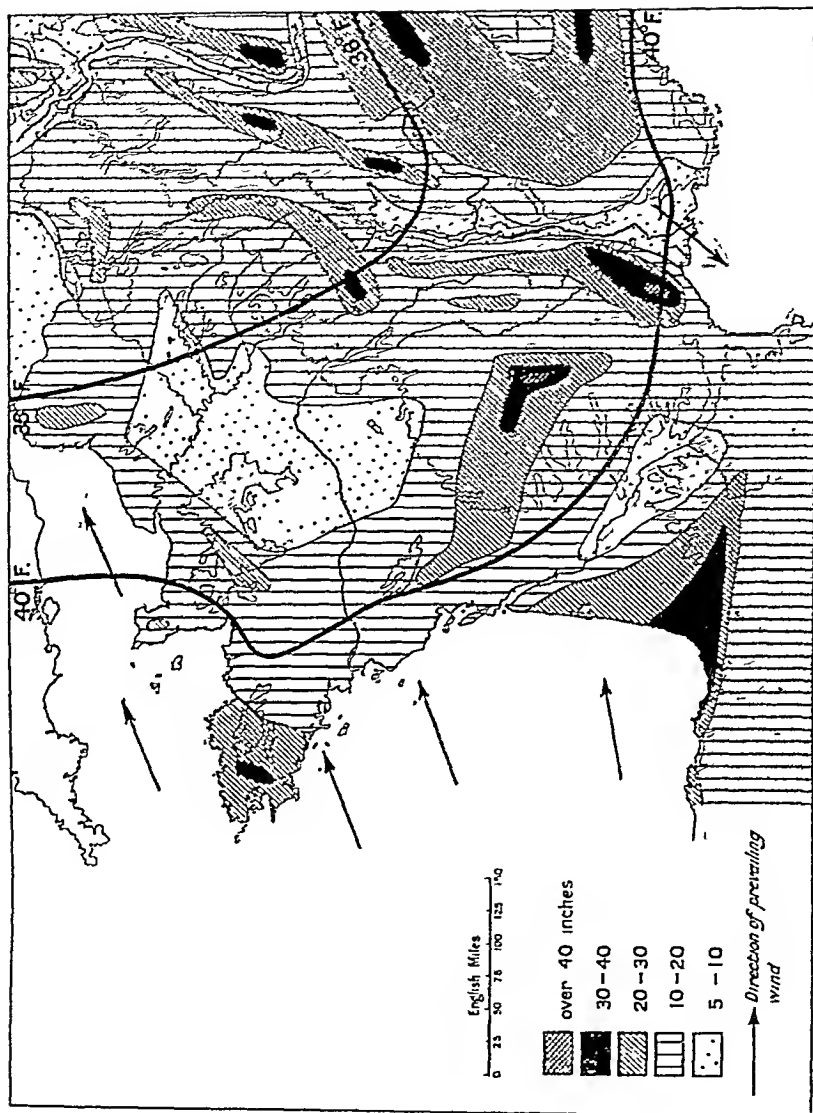


FIG. 13.—CLIMATE OF FRANCE.  
Winter conditions (Nov. 1 to April 30).

shift north, they lie in the dry area of high pressure, which normally occurs just north of the tropic of Cancer. Most of the rain falls, in the form of torrential showers, in the winter.

**Vegetation.**—The differences of climate and relief, coupled with the great variety of her soils, give to France a diversity of vegetation which is, perhaps, unequalled in any other European country. The maritime climate and products of north-west France present a great contrast to those of the Mediterranean region. The Alps, the Jura, and the Pyrenees show the variations of wood and pasture associated with such mountain areas. On the Central Highlands the differences of climate, relief, and soils are amply reflected in the differences in the vegetation zones. Eastwards the slopes of the Cévennes are clothed with a succession of vineyards, mulberry groves, and chestnut woods, above which are the dry upland pastures of the Causses. By the cutting down in ages long past, of the protecting forests, this region has been exposed to the full forces of erosion with disastrous results. Westwards Limousin receives copious rains from the prevailing winds, and cattle and sheep are bred on its rolling pasture lands, whilst in the higher, bleaker parts are extensive stretches of heather clad moorlands. Northwards the fertile agricultural plains of Forez and Limagne are succeeded by the poor sandy district of Sologne Bourbonnaise, whose infertile soil can only produce poor woods, heaths, and marshes. Eastwards Morvan is a district of woods and pastures, whilst on the Plateau de Langres, between the courses of the Seine and the Marne, is one of the most thickly wooded areas in France.

In the Alps and the Jura, the broad valley-bottoms, watered by innumerable alpine streams, are covered with rich grass lands, whilst the steeper slopes above the flat floors are clothed with pine woods, which are, in their turn, succeeded by upland pastures. In winter the latter are covered with snow. In the Vosges, we find the same succession of zones, pastoral or agricultural, succeeded by forest and then upland pastures.

In the Mediterranean regions in summer, the pastures, such as they are, are dry and scorched, and many of the plants die down and do not awaken until the early spring. The trees

protect themselves from the all-too-ardent rays of the sun in various ways. Some hang their leaves edgeways in order to reduce evaporation, and for the same reason many of them have small leaves, which are often protected by hairy coverings, or which contain protective oils. The vine, the olive, and most of the Mediterranean trees have long roots in order to enable their owners to get right down into the soil and thus to withstand the prolonged drought of summer.

In the lands washed by the English Channel, everything is at its best at this season. The oaks, the beeches, and other deciduous trees spread themselves under the gentler beams of a less powerful sun, whose more slanting rays are often veiled by masses of cloud. Whilst the apples are ripening in the smiling orchards of Normandy the pastures are still fresh and green. In this region, the beech is the predominant tree, though the marshy banks of the streams are, as in so many other parts of France, lined with willows or with poplars. Eastern Normandy is, broadly speaking, a pastoral region, whilst the granites, schists, and sandstones of the Armorican Massif which form the western portion weather to a poor infertile soil covered with scanty woods and moors. Such a region is known as a bocage. This bocage stretches southwards through western Maine and Anjou and thence south of the Loire to the Bocage Vendéen. Its eastern boundary is the edge of the old rocks which compose these much denuded uplands. There are extensive woodlands in the interior of Brittany. This inland region, the Arcoat or Wooded Land, is in marked contrast to the rich coastal fringe of the Armour or Sea-land. The Basin of Rennes is isolated, even to-day, by extensive belts of woods.

Man, during the course of ages, has greatly modified the surface of all civilised countries. Such modifications are specially marked in such a region as the Paris Basin or in the Mediterranean Lands. In the latter region, enormous damage has been done by the cutting down of forests, and the bad effects of such deforestation has already been referred to in the Causses. In many cases the surface soil has been practically washed away. There are, at the present time, few extensive forests in

Mediterranean France In many parts, former forests have given way to a kind of scrub, *maquis*, where many of the trees appear in dwarf form A still poorer type of vegetation, *garigues*, is found on dry, calcareous soils The vegetation of the French Riviera has been very greatly modified by man Woods of chestnut or evergreen oaks or typical drought-resisting shrubs such as laurel, rosemary, brooms are found on the hill-sides, whilst palms, so often regarded as typical of the Mediterranean, though only the dwarf variety is native, acacias, and other trees too numerous to mention abound in the gardens and streets In the valley of the Lower Rhone, the beech, owing to the absence of summer rains, is not found, but north of Lyon, where there is a certain amount of summer rain, it reappears At the eastern end of the Pyrenees there are extensive forests of holm and cork oak, whose small leaves assist in preventing undue evaporation In the drier parts are *maquis* and *garigues* The French slopes of the Western Pyrenees are, owing to their copious rainfall, richly forested Woods of the chestnut and oak are succeeded by beech trees, which in their turn are replaced by larch and pine Above the latter are rich pasture lands, which form a contrast to the drier pastures of the Central and Eastern portions of the range

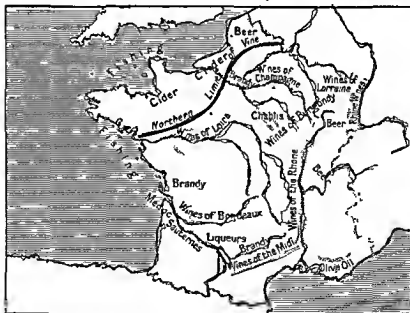
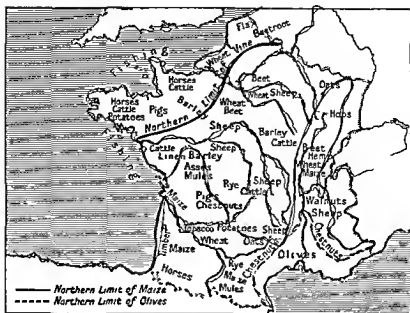
In the Basin of Aquitaine, trees common to both the Mediterranean districts and to north-western France are found The evergreen oak grows fairly far north, but in the southern portion of the basin the beech, present in the Western Pyrenees, disappears There are chestnut woods in the central portion, whilst along the coastal zone, as a result of well-planned afforestation schemes, there are now extensive pine forests on the sandy soils of the Landes The natural vegetation of Aquitaine has, however, like that of the Paris Basin, been greatly modified by man In the latter region, the loam-covered plains of Picardy, of Beauce, and of other portions of the basin, form one end of the great loess belt which stretches across Central Europe, north of the mountain zone They have so long been the scene of agricultural endeavour that their original vegetation, though probably of the steppe type, must to a certain extent be a matter

of conjecture. In <sup>\*</sup>the sandy areas, such as that stretching from Fontainebleau, in the east, to Rambouillet, in the west, extensive pine forests still remain, whilst on the clay areas of the higher portion of Brie or on the Argonne Hills and other parts of Champagne Humide there are densely wooded districts. The dry, chalk lands of Champagne Pouilleuse, which lack the loam covering, are, on the other hand, covered with grass.

The coastal belts of the north and west were probably never forest areas. Few trees could thrive on these exposed, wind-swept coasts, and the wet soils were also an additional disadvantage for woodland growth.

**Agriculture.**—“*C'est un très grand honneur de posséder un champ,*” wrote Charles de Pomairols, and in this short phrase is summed up the attitude of the average French peasant towards the soil. ✓ Slightly less than half of the surface of France consists of arable land, and a very great proportion of this land is owned by the small farmer or peasant-proprietor class. As agriculture is one of the chief sources of the wealth of France, so are the landowning peasantry one of the mainstays of the country.

During the years of the war of 1914-18, agriculture suffered not only in the fighting areas but also throughout the whole of the country. After the conclusion of the conflict modern methods were introduced on a large scale, and through the use of scientific fertilisers, of motor-driven machinery, and of electric power great strides were made. In the post-war years, the depreciated currency resulted in a great demand for French goods on the part of foreign countries; and this fact, coupled with the great loss of man-power owing to the conflict of 1914-18, to the decline in the birth-rate during these years, and to the introduction of shorter hours of work, caused a very great demand for labour. In order to supply this demand, immigrants were encouraged from the neighbouring countries, and there was a large influx of foreign workmen, especially farm hands, from Northern Italy and Spain and from Belgium. The two former settled, the one chiefly in the Mediterranean districts, the other in South-west Aquitaine, whilst the Belgians made their home in the agricultural and industrial areas of the north.



CHISS & CO. HOLBORN

FIG 14—ECONOMIC PRODUCTS OF FRANCE



The most important cereal crop is wheat. The cool, wet winters, the rainy and somewhat lengthy spring seasons, and the dry, sunny summers, coupled with the fertile loam covering, make the plains of Northern France especially suitable for the growth of this product. Picardy, Beauce, and Brie in the Paris Basin; the rich plain of Toulousain in the Basin of Aquitaine; the Plain of Limagne, where rich volcanic deposits cover the underlying clays; and in Eastern France the plains of Bresse and of Alsace are the great wheat-producing areas. The loam-covered limestones of Beauce are one of the finest wheat-producing areas in France, but where this loam sheet is absent the soil is extremely poor, and is in parts almost a desert. In Aquitaine, maize replaces wheat on the plains lying on the north-western side of the Pyrenees, for here are warm, sunny summers coupled with a greater rainfall than the regions to the north. Maize cannot, however, be grown in Mediterranean France without irrigation on account of the lack of summer-rains. Barley, though it can be grown in any climate suited to wheat, has a much greater range than the latter product. It is grown chiefly in the north, where it is associated with the hop-growing areas, both products being used in the production of beer. On the poorer soils of Brittany and the Central Highlands, and where the climate is more severe, rye, oats, and buckwheat (*sarrasin*), are cultivated. The latter crop will thrive on the poorest soils, especially on such sandy areas as are found in Brittany or Limousin. These sandy soils are also well suited to potatoes, and these two regions, together with the plain of Picardy, are the principal potato-growing areas. The sugar beet is grown on the loam areas of Beauce and Picardy; on the gravel clays of Flanders; and on the volcanic soils, rich in lime, potash, etc., of Limagne. The latter region, together with the neighbouring plain of Forez, produces a great variety of crops.

Both the vine and the olive can be grown without irrigation, but the latter requires more sunshine than is necessary for the vine and it cannot stand cold winters. Its range is, therefore, much more limited than that of the vine, and in France it is confined to the Mediterranean area, whilst in the Rhone valley

it is not found north of Valence, though both the vine and the mulberry tree are found throughout the valley. The northern limit of vine production, from an economic point of view, is a line drawn slightly north of the mouth of the Loire and running north-east. A prolonged autumn period with a fairly high September temperature ( $60^{\circ}\text{F}$ ) is necessary in order that the grapes may ripen properly. Thus along the Channel coasts we find the apple replacing the grape. Cider largely replaces wine as the drink of the country. Though the vine requires a moderate amount of rain, yet the soil must be both warm and light, e.g. chalk and limestone districts, so that the superfluous moisture may drain away from the roots. On the dry, sunny slopes of the Falaise de l'Ile de France, whose steep scarps face south-east, are grown the grapes from which the celebrated sparkling wines of Champagne are made. Reims is one of the oldest centres of the Champagne wine trade. On the slopes of the Cote d'Or are produced some of the most famous wines of Burgundy. Most of the vineyards of the Bordeaux district are situated on the left bank of the Garonne and the Gironde estuary. In this district is perhaps better illustrated than elsewhere how greatly the vine, and therefore the resultant wine, is affected by slight differences in the nature of the soil. North of the Gironde brandy is distilled from the wines grown in the basin of the Charente. Champagne, the Gironde district, and Burgundy are the chief regions producing wine for export. The vines of the Loire and those of Mediterranean France are grown chiefly for wines for local consumption. On the dry, limestone slopes of the Vosges overlooking the Plain of Alsace there is an extensive vine-growing area.

The plains of Provence and of Roussillon, the "pays" of Brittany, the band of agricultural districts round Paris, and the "hortillons" of the Somme are all engaged in market gardening, and in producing early fruits, flowers, and vegetables for the Paris and London markets. The aspect of the "pays" along the coasts of Brittany has an important effect on their products. Those which face south, or which are sheltered from the force of the prevailing winds, have a singularly mild climate. Fuchsias

and palms thrive in the open, whilst peaches, apricots, and all kinds of early vegetables are produced. Above and below Amiens the Somme flows in a broad, marshy valley, into which drain the waters from the base of the chalk ridges. The stream is divided into many channels, whose waters are directed into the innumerable canals which intersect the multitude of market gardens for which this district is famous.

On the coastal plains of Brittany, Normandy, and Flanders, cattle are bred, whilst in the regions where the soil is drier, such as the limestone Pays de Caen, horses are reared. The plains of Limousin, exposed to the prevailing winds, the well-watered valleys of the Jura and the Alpine regions, and the valleys of the Western Pyrenees are all cattle-rearing districts. The dry, chalk plains of Champagne Poulleuse, part of the plains of Picardy, the drier parts of Limousin, and the grass lands of the Eastern Pyrenees are all sheep-producing regions. In Mediterranean France flocks of sheep are taken up to the higher pastures during the early summer. Here on the Causses or the alpages of the Pyrenees or the Alps of Provence the sheep remain until the autumn, when they descend once more to the valleys below. In Beauce, in Brie, and in Toulousain and in other farming areas flocks of sheep are allowed to feed upon the fallow lands during the autumn, thus clearing the stubble and enriching the ground with their droppings. ✓

**Fisheries.**—Though the fisheries of France are not as important as those of many other European countries, yet, owing to Government encouragement, they are undoubtedly developing. In the north-west, the Bretons, isolated from the rest of France and with only poor lands in the interior, have for generations looked towards the sea for their livelihood, and to-day they form the bulk of the French fishing peoples. Trawlers from Brittany visit not only the North Sea fishing-grounds, but also the Grand Banks of Newfoundland for the cod fisheries. Along the coasts of Brittany (Gulf of St. Malo and Bay of Morbihan), and southwards along the Atlantic seaboard (the estuary of the Gironde and the Basin of Arcachon) are oyster fisheries. There are sardine fisheries along the Mediterranean and the Atlantic coasts, from

Brittany southwards, though those of the former sea are more important. In the Mediterranean there are also tunny and anchovy fisheries. The French Government has in hand a scheme for the creation of four national fishing-ports, one on the north coast at Boulogne, two on the west coast at Lorient and La Rochelle, and one on the Mediterranean, either at Cette or at Port de Bouc, near Marseille. Of these only the one at Lorient, on the south coast of Brittany, has been completed, though the fishing accommodation both at Boulogne and at La Rochelle has been greatly improved. The creation of the new fishing-port at Lorient has, during the last three years, increased the number of tons of fish brought into the port each year by two and a half times. The consumption of fish in France is somewhat greater than the home supply and a certain amount has to be imported.

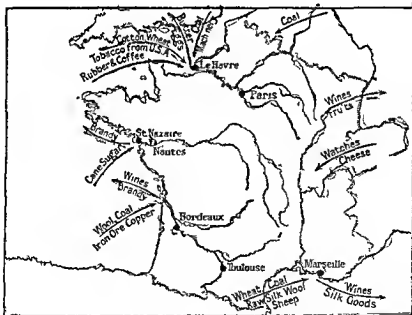
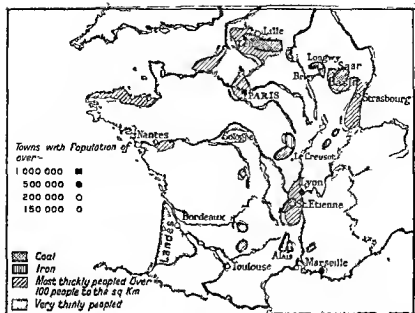
**Industries**—The industries of France have not only recovered from the devastating effects of the war of 1914-18, but they have risen with renewed power and have attained a vigour which, even in their most flourishing pre-war years, they had never reached. In the area devastated during the War, most of the factories have been entirely rebuilt, and practically all of them have been equipped with the most up to date plant. Outside this area, the great factories which were built during the War, for the mass production of munitions, have been placed on a peace basis and have been adapted to modern commercial needs. The general organisation of industry, as a whole, has been enormously improved, and selling agencies and better means of transport have been introduced. In most of the more important industries, the tendency is for the management to be limited to a small number of large and powerful combines. These methods have not been confined to France alone, and trade agreements between international groups of industrialists have further tended to eliminate competition, thus making for efficiency and for a general lessening of the costs of production. Possibly the close connection between the different branches of modern industry will prevent the obvious danger of an artificial rise in prices owing to the monopoly enjoyed by the great combines.

The recovery of Alsace-Lorraine has had the effect of adding some 5,600 square miles to French territory and some 1,700,000 people to her population. It has also brought back to France vast deposits of iron ore, coal, and potash, and it has, by the addition of important manufacturing areas, greatly increased the output of textile goods.

France is, comparatively speaking, poor in coal. Her output is about one-seventh that of Great Britain in normal times. The most important coal area, the Nord and Pas-de-Calais, is a prolongation of the Belgian coalfield. The French portion extends from Anzin, near Valenciennes, and through Lens to Béthune. The coal here, unlike that round Namur in Belgium, is worked at a great depth. This northern coal area produces about three-fifths of the total coal of France. The other coal-producing areas are, in order of production, Alsace-Lorraine, the Loire (St. Étienne), Bourgogne (Le Creuzot), the Tarn-Aveyron, and the Gard (Alais) areas. In addition to supplies from the above regions, France has the output of the Saar Basin until the year 1935. The fact that the coal is worked by a small number of groups makes for efficiency and reduces the cost of production.

As a result of the addition of Alsace-Lorraine to her territory, the iron ore capacity of France has doubled, and her production now ranks second only to that of Germany. The mines of Lorraine produce 80 per cent. of the total for all France. The basins of Longwy, Briey, Nancy, and Lunéville are amongst the most important ore-producing areas of Lorraine. As there is a shortage of coking coal in France, it is necessary to import large quantities in order to feed the blast furnaces in which the iron ore is smelted. Much of this coke is sent to the ore-smelting districts from Germany. Outside Lorraine iron ore is found in Brittany, the Pyrenees, and Normandy. In the latter region, the ores are found in the limestone Campagne de Caen, where they are quarried and smelted round the ancient university town of Caen, a considerable river-port on the Orne.

Thanks to the plentiful supply of iron ore, the French iron and steel industries are flourishing. These are chiefly situated on



CH 23 & CO. HOLLAND

FIG 15—INDUSTRY AND COMMERCE

the coalfields, as it is easier to take the unfinished iron to the coal than it is to transport bulky masses of coal to the iron. For the same reason, it may be noted, it is easier to take the lighter coke to the blast furnaces than it is to convey heavy masses of unsmelted ores to the coke-producing districts.

The various branches of the engineering industry are amongst those which have been revolutionised since 1914. There has been an enormous post-war demand for new machinery for mines, mills, and factories, especially those of the devastated areas. It is estimated that the electrical and motor industries employ more than half the engineering workers of the country.

There has been throughout most civilised countries a great increase in electric power in recent years, and this has been especially marked in the case of France. Her development in this respect is only exceeded by that of Italy amongst European countries. As one would expect, the chief hydro-electric schemes have been, or are being, carried out in the mountain areas, and the districts where most progress has been made are the Pyrenees (Ossau valley), Vosges, the Alps of Dauphiné (Isère and Romanche valleys), Alps of Provence (Durance valley), Jura (Ain valley), Central Highlands (on the Truyère, a tributary of the Lot), and on the Blavet in Brittany.

By means of grants and in various other ways the State has done much to foster the development of electric power not only in the great industrial regions, but also in the rural areas. In the latter districts, it is encouraging the use of electricity as a motive power for agricultural machinery and for use in local and home industries, such as lace-making in the Auvergne, wood-carving in the Vosges, or glove-making at Grenoble. Aluminium works have been established in the Isère and the Durance valleys. A very high temperature is needed for the process of making aluminium, and, therefore, it is important to have works where a plentiful supply of power can be obtained. In addition to the hydro-electric stations, there are a large number of thermic stations both in the regions around Paris and in the industrial north.

The industry of paper-making is of necessity a scattered one,

U5 F8 20802  
 but a certain amount of cohesion is produced by the fact that the general direction is concentrated in a few hands. At Grenoble the paper is made from rags, whilst in the Paris area it is made from imported wood pulp. On the other hand, at Limoges straw is used. The latter town was famous in the twelfth century for its enamelled goods, whilst to day the local kaolin (china clay) is made into porcelain.

As a result of post war organisation, most of the textile industries of France are in a flourishing state. The principal textile towns lie on or near the coalfields. The chief centres of the woollen manufacture lie amidst the sheep-rearing areas of the north and within easy reach of the Nord coalfield. The chief wool towns are Reims, situated on the edge of the sheep pastures of Champagne-Pouilleuse, Amiens, on the Somme, amidst those of Picardy, and Lille and Roubaix, on the coalfield. All these towns are also within easy reach of the wool importing ports of Havre, Dunkirk, and Rouen. France obtains most of her supplies of raw wool from the British Empire. She is, however, trying to foster production in such of her colonies as are suitable, e.g. Algeria and parts of Madagascar.

As a cotton manufacturing country, France ranks third in the world. The cotton towns of Lille, Roubaix, Tourcoing, and Rouen have the advantage of a fairly damp climate. The latter town, a busy river-port on the Seine, is the chief manufacturing centre. As in so many other towns, the cotton industry has superseded the former woollen one. In Alsace, one of the chief centres of manufacture is Mulhouse. Here, as at Rouen, the inherited skill of generations of weavers has now been largely transferred from the woollen to the cotton industry. In a similar way, the manufacture of woollen goods has been replaced by that of cotton at Troyes, which is renowned for its hosiery. The United States, Egypt, and India are the chief centres from which France draws her supplies of raw cotton.

Of all her textile industries that of silk is the most important. Here, as in the case of the woollen industry, the manufacturing towns are situated where there are supplies of raw material, i.e. in the Rhone valley. The home supplies are quite inadequate,



and raw silk is imported from Japan and China. Attempts are being made to revive the silkworm culture in French Indo-China. The chief centre of the industry is Lyon, which lies in close proximity to the Loire (St. Étienne) coalfield. The production of artificial silk is revolutionising the silk industry, and not only are there factories for the manufacture of this product in the Lyon district but others have been established at Strasbourg and Colmar in Alsace and at Calais.

Most of the world's supply of jute is grown in the British Empire, and therefore the great European entrepôt port for this product is London. The chief jute-manufacturing centres in France are consequently in the north, where they can easily obtain their supplies of raw material through the Channel ports, and where there is also an ample supply of coal. There is one very important additional factor, however, and that is that here, in the north, is the great market for jute goods, e.g. sacks. Both the coal and the agricultural industries require sacks in which to pack their goods. All these things have favoured the establishment of the jute-manufacturing industry in the north of France.

Communications, Transport, and Towns.—Communications in France follow certain well-defined lines, converging on the gaps which connect the lowland areas. The upland regions are more or less isolated, and few main routes run across them. Each of the three main lowland areas, the Paris Basin, the Basin of Aquitaine, and the Rhone-Saône depression, are connected. The two former are linked by the Gate of Poitou. Forming the southern entry into the Paris Basin, there are here concentrated, within a strip some forty miles wide, the main routes leading from south-west to the north. Here the Franks fought against the Arab, and here too the English and French were arrayed against each other. Southwards the main entries into France from Spain are round the ends of the Pyrenees. The passes over these mountains, such as that of Roncesvalles in the west, are high. The route through the Gate of Carcassonne connects Aquitaine with the Rhone valley and the Mediterranean. The route from the Rhone-Saône trough into the Paris Basin crosses the comparatively low Côte d'Or.

As all the principal routes in France converge on the Paris Basin, so do all those in the Basin itself lead towards the centre where stands, at the meeting place of waterways, roads, and railways, Paris, the capital city. From the north west comes the route up the Seine from Havre via Rouen. From the north routes lead across the uplands of Picardy from the channel ports, Calais, Boulogne, and Dieppe, and from the industrial regions of Northern France and Belgium. From Northern Germany

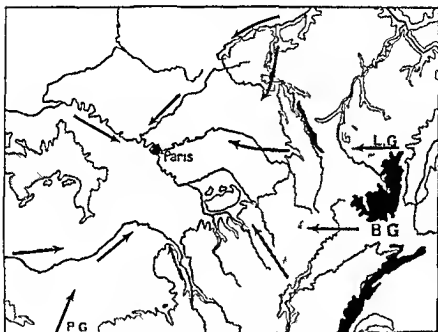


FIG 16.—PARIS AS A FOCUS OF ROUTES.

one route leads along the northern foot of the Ardennes, and then follows the valleys of the Sambre and the Oise, whilst at Namur a second way leads up the valley of the Meuse, and, skirting the northern foot of the Argonne hills, makes for Reims and thence to Paris. From Strasbourg and the Rhine a route crosses the Col de Saverne to Nancy, thence through the pass of Toul, leading from the Moselle to the Meuse, and then down the valley of the Marne to its confluence with the Seine on the outskirts of Paris. From Basle another route from the Rhine

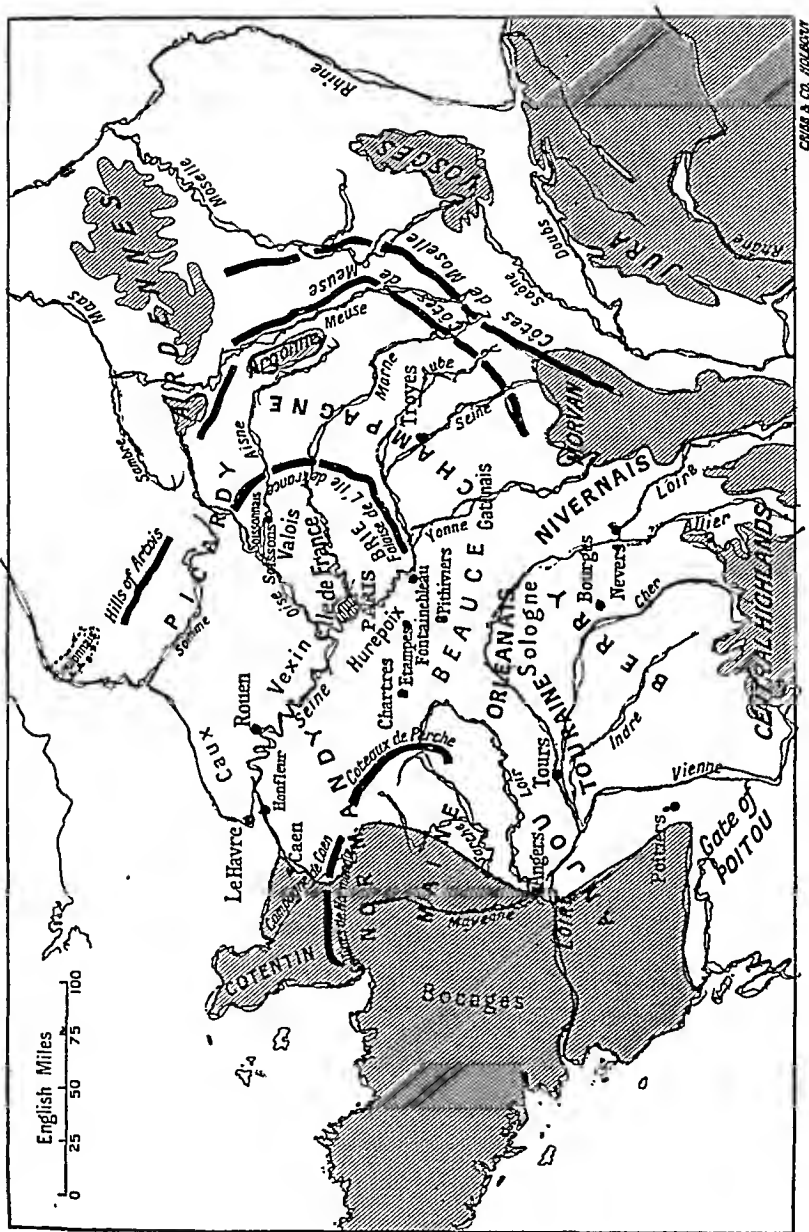


FIG. 17.—MAP OF THE PARIS BASIN.

CHAS. & CO. HOLMST.

passes through the Burgundian Gate, crosses the Plateau de Langres, and follows the valley of the Upper Seine to the plain. From Marseille the route runs up the Rhone valley to Dijon, crosses the Cote d'Or, and descends by the valley of the Yonne. In addition to the routes already mentioned, two routes meet at Orleans, which is situated at the most northerly point of the great northward bend in the Loire. One way follows the river downstream from the Central Highlands, whilst the other runs upstream from Tours. At the latter town two routes again meet, one coming from the mouth of the Loire and the other coming through the Gate of Poitou from Bordeaux. Thus, in a

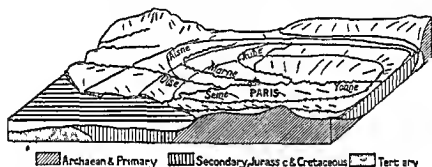


FIG 18.—BLOCK DIAGRAM ILLUSTRATING THE FORMATION OF THE PARIS BASIN

greater degree than is perhaps found in any other country except England, the routes of France converge on the capital city.

Paris originally rose up as a settlement of fisherfolk on the banks of the Seine, and the little settlement gradually grew. In the Middle Ages water routes were especially important, for the former Roman roads had become useless through long centuries of neglect. So this town with such a wonderful command of waterways steadily increased in size and power. It became the seat of the government of the French kings, and by the thirteenth century it had spread over both banks of the Seine. By the fourteenth century the city had a population of half a million. Two centuries later the number of people had doubled, whilst today the population numbers close on three millions.

In the gap between the Buttes Chaumont and the Butte de

Montmartre lie two of the great railway termini of Paris, the Gare du Nord and the Gare de l'Est. By this entrance, too, comes the road from Flanders. Westwards of the city rise the wooded heights of the Bois de Boulogne, encircled by the great bend of the Seine. South-westwards is Versailles, in whose former royal palace the Peace Treaty was signed on June 28th, 1919.

On the Ile de la Cité, in the heart of Paris, stand the cathedral of Notre Dame and the Palais de Justice. The Rue de Rivoli, running parallel to the Seine, leads to the Place de la Concorde, from which one can see the Chamber of Deputies, behind which rises up in the distance the gilded dome of Les Invalides, whilst from this spacious square the Avenue of the Champs Élysées leads up to the Arc de Triomphe.

Standing at the head of navigation on the Seine, Paris is not only one of the foremost river ports but also one of the first markets of France. Owing to the relative smallness of the coal supplies, there are no industrial regions in France comparable in importance to the industrial districts of Northern and Midland England. Paris, therefore, has no rivals amongst the provincial cities of France such as Birmingham or Manchester, which may be said, in some measure, to rival London. Not only is Paris the political and administrative centre of France, but it is also the greatest commercial, industrial, scientific, and artistic centre in the country. The industries of Paris are, like those of London, almost too many to enumerate. The whole of France helps to supply the capital with goods of every description. The "pays" of Brittany send early fruits and vegetables, the grass lands of Normandy supply cheese and other dairy produce, whilst Bordeaux, Burgundy, and Reims send to Paris their wines. Fast fish trains bring their loads from Boulogne or Lorient, whilst along the canals glide barges, laden with wheat or with coal, from the northern areas.

The chief industrial areas lie to the north and east on the plain between the Marne and the Seine. Here in such districts as St. Denis, Pantin, Clichy, the flat land allows the construction of the necessary large buildings and factories. To the mills is

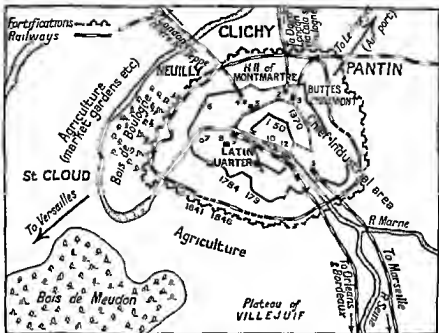


FIG. 19A—THE GROWTH OF PARIS

Local considerations—From a little fishing settlement on islands in the Seine—the Ile de la Cité of to-day—Paris has grown in importance until it is one of the first capital cities in Europe. The successive lines of fortifications serve to show the gradual growth of the city. Paris is now surrounded by a ring of outer suburbs which are well served by rail and other transport services. Development has been chiefly on the right bank of the Seine on the level plain between that river and the Marne (see Fig. 16).

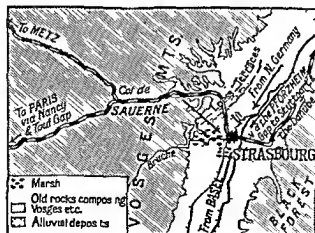


FIG. 19B—STRASBOURG

A route centre and river port—Strasbourg is situated at the confluence of the Bruche and the Rhine near the point where the latter joins the Rhine. Strasbourg commands routes not only up and down the Rhine but also through the Col de Saverne to Paris and through the Pfalzgraben Gap to Stuttgart and the Danube.

Fig. 19A Key

- 1 Gare St. Lazare
- 2 Gare du Nord
- 3 Gare de l'Est
- 4 Madeleine
- 5 Bourse
- 6 Arc de Triomphe
- 7 Tour Eiffel
- 8 Invalides
- 9 Gare d'Orléans
- 10 Palais de Justice
- 11 Louvre
- 12 Notre Dame
- 13 Gare de Lyon
- 14 Luxembourg

brought the corn from Beauce ; to the sugar refineries beet from the plains of Picardy, Beauce, and Limagne, whilst the boot factories are supplied with hides from the sheep and cattle-rearing areas. Paris is one of the foremost centres of the motor-car industry in France, and it is, in addition, like most university towns, a centre of the book and the printing trades. It is also one of the premier wool markets in the world. Southwards lies the agricultural plateau of the Villejuif and the whole of the district round the city is ringed with market gardens. The limestones of Beauce, and other regions, provide a plentiful supply of building materials. Paris has always been the objective of foreign invaders, for though the routes which converge on the city give it such an advantageous situation, yet, on the other hand, they make it specially vulnerable to outside attacks. In Paris is mirrored, not only the bygone history of France, but also the vision of her present hopes and future aspirations.

The French river and canal system is an important factor in the transport of the country. Most of the rivers are navigable, and they are nearly all linked together by means of canals. At the same time improvements, such as deepening or widening, are being constantly carried on, with a view to increasing their carrying capacity. The chief navigable rivers are the Seine and its tributary the Oise ; the Escaut (Scheldt) and its tributary the Scarpe. The Garonne is navigable for ocean-going steamers to Bordeaux, the Loire to Nantes, and the Rhone to Lyon. Above Nantes, however, the Loire is of little use for navigation, though various schemes are being carried out for deepening the stream. Though the Rhone is navigable to Lyon, yet the swift current of the river proves a difficulty, especially with upstream traffic. There is an ambitious scheme which aims at making the Rhone navigable to the Swiss frontier, and in addition the waters are to be used for irrigation and for the generation of electricity.

In the north, a veritable network of canals crosses the great plains of the industrial area linking the chief towns with each other and with the sea. There is a considerable canal transport, especially in heavy goods such as coal, ores, building materials,

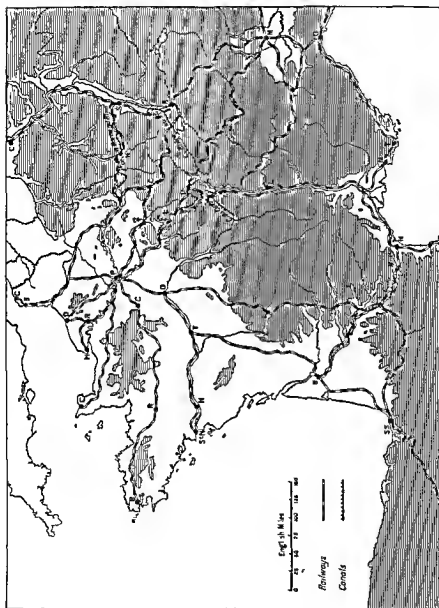


FIG 20.—CHIEF RAILWAYS AND CANALS OF FRANCE

CHIEF RAILWAYS



wheat, wood, etc. The saving effected by sending goods by canal is very considerable, and where goods are either bulky, or of relatively small value in relation to their size, this form of conveyance is of great value.

The Seine is connected with both the Rhine and the Rhone. The Marne and Rhine Canal, which connects it with the former river, passes through the gap leading from the Meuse to the Moselle and thence through the Col de Saverne to the Rhine at Strasbourg. The Burgundy Canal runs from the Yonne to the Saône, crossing the Côte d'Or at a height of 1,230 feet, thus making connection with the Rhine. Somewhat farther south the Canal du Centre crosses the north of the Central Highlands and links the Saône and the Loire. The Rhone and Rhine Canal runs up the Doubs valley and passes through the Burgundian Gate to Mulhouse, where it divides into two, one branch running southwards to join the Rhine at Basle, and the other northwards, across the Plain of Alsace, to Strasbourg. This canal is being deepened, and when the work is completed it should prove an important route for heavy goods between Alsace and the Rhone valley. The Canal du Midi, running through the Gate of Carcassonne, connects Toulouse and the Garonne with the Mediterranean and the Rhone. By the completion of the Rove Canal tunnel, the greatest in the world, the port of Marseille has been linked with the Étang de Berre and other lakes, and a vast outport has been created which will greatly relieve the congestion at Marseille itself and at the same time will enormously increase the facilities of the port.

Perhaps nothing so greatly emphasises the centralisation of routes on Paris as a study of the French railway system. From every direction routes converge on the capital. If to the study of a map is added the perusal of a railway time-table, the full significance of this centralisation will be appreciated. The excellent service which is provided between the capital and the chief ports and towns is in striking contrast to the very poor provincial services. Fast trains run from Paris in every direction, but there are few good through trains between the provincial centres, and it is only in recent years that through services have

been established between such places as Bordeaux and Marseille, via Toulouse, or between the former town and Lyon via Limoges, or between Lyon and Lille. To travel from Havre to Tours by any other route except by way of Paris is almost impossible, and even from Rouen to Chartres the best route is possibly not the direct one up the valley of the Eure, leading from the Seine to this ancient cathedral city of Beauce, but rather the one via Paris. The disadvantages of this centralisation of routes is even more marked in the case of goods than it is in

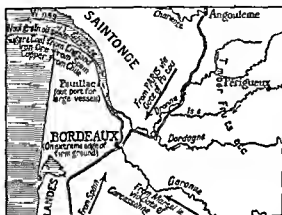


FIG. 21.—BORDEAUX

A seaport and route centre. The town rose up on the extremity of a strip of firm land. Below the city the estuary of the Gironde broadens and is often bordered by marshes and swamps. To-day large vessels use the outport of Pauillac. Bordeaux has important iron and steel industries, as well as those of sugar refining and the bottling of locally grown fruits and vegetables.

organisation generally. In addition, there are projects for the electrification of some of the principal lines, such as the Paris-Orleans and the Midi systems.

The former line has running powers over parts of the latter's system, and the international trains to Spain via Irun are run by it. One route from Paris runs to Orleans, down the Loire to Tours, in the heart of the "Châteaux country," and through the Gate of Poitou to Bordeaux. From here it traverses the Landes and runs round the western end of the Pyrenees to the frontier. The other line to Spain, after leaving Orleans, runs to Limoges, and skirts the edge of the Central Highlands on its

the case of passenger traffic. The delay in the former is bound to be very great when frequent changes are necessary. At present goods traffic from the Channel ports to Alsace has to travel over three lines, the Nord, the Est, and the Alsace Lorraine group. Various schemes for regrouping are projected with a view to effecting economies in administration and

way to Toulouse. Thence it passes through the Gate of Carcassonne to Narbonne, and, on reaching the coast, it runs through Perpignan to

Barcelona. Both Limoges and Carcassonne on this line are excellent examples of route towns. The former is situated at the junction of the hill and the plain.

One route follows the valley of the Vienne and crosses the wild plateau of the Millevaches, whence it leads to the centre of the Auvergne. A second route leads north to Argenton,

whilst an ancient route from Périgueux aims at Limoges and then strikes north-westward across outlying spurs of the low Monts de

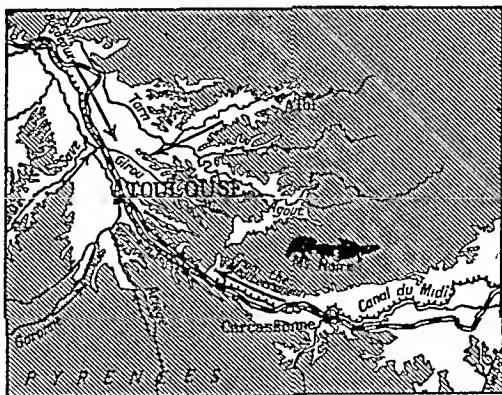


FIG. 22.—TOULOUSE.

A great inland town whose prosperity is based on agriculture. This town, an important route centre, is the chief inland town and market of the Garonne basin. Situated as it is in a region of clays and alluvial soils, brick is the chief building material which is used, not only in the construction of the houses, but also as the material for all the important public buildings. The latter fact is rather exceptional in France.

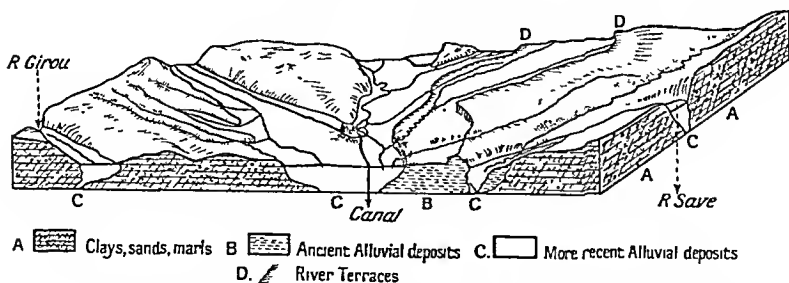


FIG. 23.—BLOCK DIAGRAM ILLUSTRATING THE GEOGRAPHICAL FACTORS WHICH HAVE INFLUENCED THE GROWTH OF TOULOUSE.

The diagram shows the district round Toulouse. On the west is the Save and on the east the Girou. Compare this with Fig. 22.

Blond. In early times, this route was followed by traders seeking tin in the latter district. Limoges thus early became a commercial and an ecclesiastical centre. Besieged and sacked by

the English, a victim of plague, the centre of religious wars, it declined in importance as the towns of the northern plain rose in wealth and power. Once the capital of Limousin, it is now merely the chief town of the Haute Vienne department. Carcassonne was once an important fortress town guarding the pass between the Pyrenees and the Central Highlands. With its fifty towers, its grim double line of walls, its frowning battlements and turrets, it is one of the finest specimens of a mediæval fortress which exist at the present time.

The Paris-Lyon-Mediterranean route crosses the Cote d'Or to Dijon, whence one branch runs through the Jura, taking advantage of the Cluse of Pontarlier, to Berne, whilst the other runs down the Rhone valley to Marseille. A branch of this latter route runs through Bourg and reaches Turin via the Mont Cenis route. The coastal line from Marseille runs to Toulon, the Mediterranean naval port, where it turns north and runs inland behind the Monts des Maures, and along the Argens valley, until it rejoins the coast at St Raphael. This route, through the Argens valley, has been used from early times. Along it ran the Roman road leading to the Rhone and the basin of Aix.

The Etat (State) line serves the north-west generally from Bordeaux, in the south, to Hayre and Dieppe, in the north. The former port is the great coffee and cotton importing port, a terminal port for trans-Atlantic liners, and a packet station for Southampton. In addition to the two ports already mentioned, the Etat system connects Paris with the naval ports of Cherbourg and Brest. The latter route runs through Chartres to Rennes. This town lies in a depression known as the Basin of Rennes. It is an isolated district surrounded by belts of forest, heath, and woodland. After leaving Rennes the line runs between the Northern Plateau and the coast to Brest. At Chartres a line runs south-west to Tours and thence to Nantes and St Nazaire. The former town, one of the two capitals of Brittany, declined in importance owing to the silting up of the Loire and also to the increased size of modern vessels. Though St Nazaire, at the mouth of the river, has to a certain extent superseded Nantes,

yet the latter city has in some measure regained its importance by the cutting of a ship canal. La Rochelle lies on a branch of the Paris-Bordeaux line. An outport for this town has been constructed at La Pallice. Protected by marshes and sheltered by islands and promontories from the westerly storm winds, La Rochelle was, in the Middle Ages, in an excellent defensive position.

The Nord system serves the northern industrial area, and thus establishes communication between Paris and London, via either Calais or Boulogne, and with Brussels, Cologne, and Berlin. By the Est and the Alsace-Lorraine lines, Paris is connected with the Rhine and with Switzerland. One line runs from Paris to Strasbourg, via Toul and Nancy, whilst the more southerly branches of the Est run along the Marne and the Yonne respectively, joining at Chaumont. From here the united line runs through Belfort, in the Burgundian Gate, to Mulhouse. There are several projects for tunnelling the Vosges and thus improving connections between Alsace, on the one side, and Lorraine, on the other. From the French point of view it is important that everything should be done to facilitate communications between Alsace and other parts of France.

**The People and their History.**—Though France has less frontier on the Mediterranean Sea than on the Atlantic Ocean, yet the former region has had by far the greater influence on French civilisation. By the Mediterranean, France was connected with the great civilisations of remote times in Egypt, Phœnicia, Greece, and Rome. The Rhone valley offers one of the most important passages leading from the Mediterranean to the interior and from the valley itself routes lead not only to different parts of France, but also to the adjoining regions. Thus, by these ways, influences from the Mediterranean were spread inland. Along the borders of the latter sea, and also along the other seaboard of France, the Phœnicians and Greeks established trading centres. Their principal aim was, however, commerce, and, as their colonies were purely maritime, depending for their safety on sea power, the Phœnician influence had, unlike that of Rome, little effect on the general development of the French race. It was through

the Rhone entrance that the Romans first penetrated into France, and here, in the valley of the Lower Rhone, they founded their first province outside Italy, Provence, whilst from this starting-place their rule extended throughout Gaul. The Roman tradition survived the onslaught of the barbarian tribes, and after these had passed the influence of the one strong central power, the Church, also spread from the Rhone valley outwards to the Basins of Paris and of Aquitaine and to the more isolated Central Highlands. In the south, where the Roman power had naturally been strongest, the system of government was greatly influenced by traditions of Roman law and rule. In the Paris Basin, however, where these traditions were not so strong, the monks became the leaders of the people, and therefore the Roman law became modified, to a certain extent, by the teaching and outlook of its ecclesiastical dispensers. In the south, too, the Roman style of architecture predominated, but in the Paris Basin the rounded arch, so characteristic of this type, became modified and the pointed Gothic arch, magnificently illustrated in the beautiful cathedral of Chartres, was gradually evolved.

There were, however, many other important entrances besides that of the Mediterranean. By the routes round the ends of the Pyrenees the earliest inhabitants probably made their ways into the south-west of France, just as the ancient long-headed Mediterranean race entered the south-east from Italy.

The origin of the Basques, who inhabit the south-western portion of the Pyrenees, is very doubtful. With their long narrow faces, broad temples, wide shoulders, and narrow hips, they are a people whose origin is lost in the past.

If one studies the map of Europe, one will see that the Danube valley forms a way across Central Europe from the Black Sea to the gap, between the Jura and the Vosges, known as the Burgundian Gate. Along this route successive waves of migration have passed. Some of these new peoples settled in the Danube valley, whilst others passed on until they reached the Central Highlands of France and the uplands of Brittany. Here the descendants of a round-headed race, modified in the course of ages by mixture with other races, remain to this day. They are,

like their kinsmen of Wales and of Cornwall, the western outpost of the Alpine race who extend throughout the uplands of Central Europe. The comparative isolation of Brittany has prevented the Bretons from mixing with the neighbouring peoples, and the difficulties of communication have given rise to self-centred groups, isolated, in their turn, in their farms and villages. Here the Alpine strain remains purer probably than in most other parts of Europe. Owing to the maritime position of Brittany, and to the pooriness of the interior of the country, the Bretons have always looked towards the ocean, and have, throughout the ages, proved themselves daring and reliable seamen.

Later, a second wave, this time consisting of tall, long-headed, fair-haired people settled on the French plains. These people, who were known as the Gauls, gave their name to the district stretching from the Pyrenees to the Rhine. In the first century B.C., the Romans conquered Gaul, but Roman influence has not been great except in the lower Rhone valley.

In the third and fourth centuries A.D., Germanic tribes from the north settled on the northern coasts of France, in the Basin of Aquitaine, and in the regions adjoining Germany. One of these tribes, the Franks, settled in the Paris Basin, became the rulers of Northern France, and gave their name to the country. In the tenth century, the Normans settled in that portion of France which today bears their name, and which their tall, fair-haired descendants still inhabit. In no part of the country, not even excepting Flanders, is the Norse strain more marked than along the coastal plain and in the islands of western Normandy. Here the early Normans, like the Bretons, established more or less self-contained colonies, and even at the present time slightly different types of both peoples and dialects are found in the coastal regions. The descendants of these Normans, a few decades later, again set forth in search of fresh lands. Some sailed southwards to the Eastern Mediterranean and to Sicily, whilst others made their way across the Channel. These latter, under Norman William, not only implanted in England the culture, language, and customs of their people, but they introduced Norman architecture, of which Westminster Abbey and

Canterbury Cathedral, both built of Caen stone, are only two of the more famous examples.

In the eighth century, the Arabs, who had overrun Spain, invaded France, but they left little permanent mark on the French race.

It is in the great highway of the Rhone-Saône valley and in



FIG 24.—SIMPLIFIED ETHNOGRAPHICAL MAP OF FRANCE.

the Basin of Aquitaine that the greatest fusion of races has taken place. In the mountain areas, such as Brittany and the Central Highlands, more isolated and difficult of access than the plains, the types of race tend to remain purer and less mixed. In the Paris Basin, those of the earlier Alpine peoples who remained on the lowland areas were absorbed by a later Nordic wave of Gauls. Throughout northern France the Nordic influence has



been the predominant factor. Fresh Nordic blood was again added to this stock by the influx of the Germanic tribes ; the Franks in the Paris Basin ; the Burgundians in the Saône valley ; and the Visigoths in the Basin of Aquitaine. The comings of that remarkably vigorous race, the Normans, from Scandinavia, added yet fresh blood to the common stock which was gradually being evolved. Thus, here, in the central plains of France, we may expect to find the typical French race, whilst in the Lower Rhone valley the Latin characteristics will be more predominant, and in the uplands of the Central Highlands and of Brittany the descendants of the earlier Alpine tribes are found.

**History.**—On the west and on the north-west France is bounded by the cool waters of the Atlantic Ocean and the English Channel, whilst on the south the clear-cut wall of the Pyrenees and the warm waters of the almost tideless Mediterranean Sea form the boundary. Towards the east, however, the frontier line is not nearly so well defined. Northwards it runs along the crest of the Western Alps, whose steep eastern slopes look down upon the North Italian Plain, and through which the routes from the French side tend to converge on Turin. Thus it is obvious that an invading army from France would have a distinct advantage in that it would be able to concentrate forces marching from different points on the French side at one point, Turin, on the Italian side of the border. From the Western Alps the boundary-line runs through the Jura and from thence, at one period of time, the crest of the Vosges marked the frontier, whilst at another it is formed, as at the present time, by the River Rhine. The frontier line then turns north-west, crosses the wooded Ardennes, and runs vaguely across the plains of Flanders. It is here, on this eastern boundary, that France has always been tempted to aim at the expansion of her borders.

When in the year 987, Hugh Capet was, largely owing to the influence of the Church, elected king of France, he merely succeeded to the headship of one of a number of small semi-independent states to which the others gave only a very nominal allegiance. But this state, the Duchy of France, lay in a remarkably central position. Routes, and especially water

routes, so important in early times, converged on it and on its capital city, Paris, from all directions. Then, again, the central key position of the duchy tended to prevent the co-operation of



FIG 25—ANCIENT PROVINCES OF FRANCE (BEFORE 1790).

In an attempt to centralise the government and administration of France, the historic provinces were, in 1790, abolished by the French Revolutionary Government. They were replaced by eighty-three departments, which were in their turn sub-divided into districts and communes. All the local privileges of the old provinces were abolished.

such possible rivals as the duchies of Burgundy and Normandy. Fortunately for these early kings of France, outside influences, such as the Crusades, occupied the attention of the great nobles and thus enabled them to consolidate their position.

The kings of England owed allegiance to the crown of France for

their possessions in the latter country, and throughout a lengthy period they occupied either by right of inheritance, by marriage, or by conquest, a considerable portion of Western France. But these English kings came more and more to look upon their French fiefs, from which they were separated by the sea, as foreign lands and to treat them as such. This fact, coupled with similar ties of speech and outlook, caused the people of the west of France to look towards Paris, their natural centre, rather than towards England across the sea. Thus, the English continued to lose territory until, by the year 1453, they had lost all their lands except Calais.

It was not until 1491 that Brittany was united, through marriage, with the French crown. Isolated from the rest of France, partly on account of her insular position, and partly on account of the belt of heaths and woodlands which cut her off on her landward side, Brittany, though contributing her share to the common stock, stands a region apart, and she is, even to-day, possibly more detached from the general outlook of France than Ireland is from that of England.

In the south-west of France lies another rather detached region. Here, especially on the southern slopes of the Central Highlands, were the strongholds of the Huguenots. Wrestling with difficulty a livelihood from the soil, these hardy peoples were also influenced by their proximity to the Rhone valley and its Roman traditions. As Professor Fleure says: "Their hard struggles promoted dogmatic expression and stubbornness, while at the same time their civic heritage from old Rome helped them to discuss seriously, to probe fearlessly, the hardened dogmas of the later Middle Ages." As a result of the religious wars of the sixteenth and seventeenth centuries, these Huguenots were driven out of France—to the great advantage of the countries in which they settled. France, it is true, attained unity by their expulsion, but her loss in gaining this unity was, both spiritually and materially, very great indeed. It must not, however, be forgotten that the aims of the Huguenots were not solely religious, and that France, therefore, in driving them out attained not only religious, but also political unity. One effect of these internal

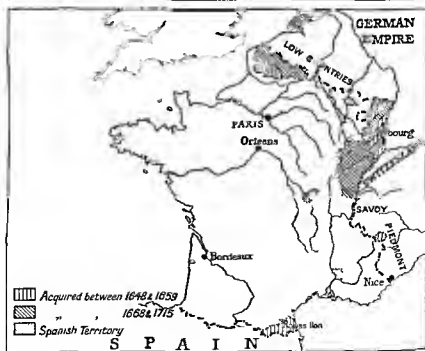
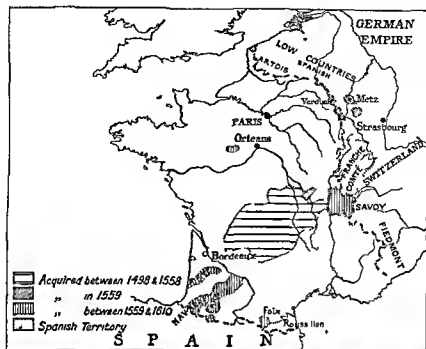


FIG. 26.—POLITICAL DEVELOPMENT OF FRANCE (I)

Above France in 1610. Below France in 1715

struggles was that it enabled the English and Dutch to forge ahead rapidly in the field of colonial expansion.

The natural centralisation of routes on Paris was emphasised by successive French rulers. The aim of Richelieu was not only to strengthen the central power, but also to extend the bounds of France on the east, whilst at the same time increasing her sea power and thus bringing to her shores fresh resources.

The unification of France was finally completed under Louis XIV, as a result of the Thirty Years' War, which, ending in 1648, had given to Louis XIII and his ministers the opportunity of extending the borders of France at the expense of the Holy Roman Empire. Louis XIV developed the policy of aiming at what the French considered their natural eastern boundary, the Rhine. As a result of his successful policy, they were able to acquire what is now known as Alsace-Lorraine, a region in which the Germanic race and language predominate. It is maintained by some that it was owing to his European policy that Louis was unable to give adequate support to the Indian and Colonial schemes of his minister Colbert. It was largely owing to this fact that Britain became predominant at sea, and that she was able thereby to replenish her resources constantly whilst those of France were being continually drained without being renewed. Thus, in order to obtain supplies, an undue strain was placed on the people who were chiefly dependent for their livelihood on agriculture, the mainstay of France then as it is to-day. The nobles, though they had lost their political power, still retained many of their other privileges, and this class distinction, coupled with the impoverishment of the common people, had its ultimate result in the Revolution. But even at this period the centralising power of Paris remained one of the dominating features.

The policy of extending the frontiers of France towards the east was the aim of successive governments of Revolutionary France, and it was achieved by Napoleon Bonaparte, who swept right up to the Lower Rhine and later formed the Confederation of the Rhine. The rise of an aggressive state in Central Europe has caused the danger arising from a geographical boundary of

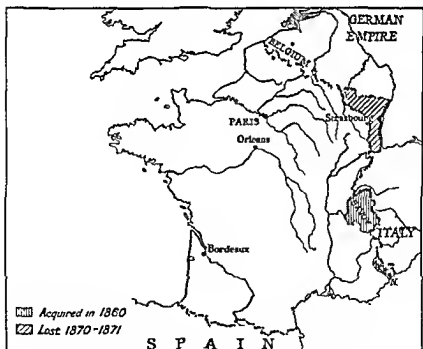
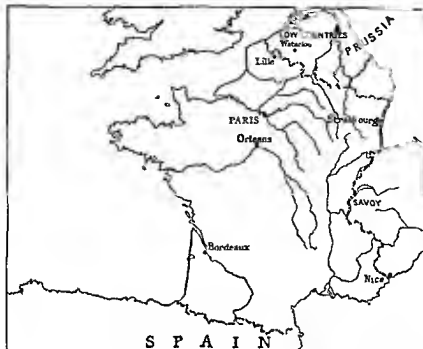


FIG. 27.—POLITICAL DEVELOPMENT OF FRANCE (II)

Above France in 1815 Below France in 1871

small value to loom large in French politics. The war of 1870-1 showed that the fears of the French were not unfounded, and the second invasion of the Germans, in 1914, has made the eastern-boundary problem the pivot of modern French politics. The northern land boundary of France is of even less geographical and military value than the eastern, and there the French people shade gradually off into the Germanic peoples of the north. In this direction, France has usually been the aggressor in modern times, and European international policy has set up in Belgium a buffer state of guaranteed neutrality and artificial frontiers in the transitional region between the French and the Dutch.

The return to France in 1919 of Alsace-Lorraine has restored to her an exceptionally rich iron-ore producing area. The interdependence of the French iron manufacturers and the German coke producers has been one of the chief causes of a series of international economic agreements dealing chiefly with the iron and steel trades. By far the most important of these is one in which Germany and France are the principals. The necessity of co-operation between these groups of industrialists should prove a powerful factor towards attaining stability in a region which up till now has always been a bone of contention between the French and the German peoples.

**Exploration and Colonisation.**—Like the other nations of Western Europe, the French entered upon a course of exploration and expansion in the fifteenth century. French colonial expansion may be divided into two periods. In the early part of the sixteenth century, France began to acquire her first colonial empire, and this period of colonisation lasted until shortly after the middle of the eighteenth century, when nearly all her possessions were lost owing to her wars with the English. During the nineteenth century, however, France gained a fresh colonial Empire, and to-day her colonial domain has a total area of over five million square miles, an area only exceeded by that of the British Empire. The population of these overseas domains numbers about  $53\frac{1}{2}$  millions. In this respect, it is interesting to note that the population of the British Crown Colonies and Dependencies, administered directly by the Colonial Office, is just

over fifty millions. This figure does not, of course, include the population of India (320 millions) or that of the great self-governing dominions.

In the year 1500, intrepid Norman and Breton fishermen visited Newfoundland, whilst in 1534 Cartier, also a native of Brittany, sailed up the St. Lawrence as far as Quebec. It was not, however, until 1608 that Quebec was founded by Champlain, and it was he who first reached the Great Lakes and who ascended the Richelieu river to the lake which bears his name. Subsequent French explorers followed the St. Lawrence and Great Lakes route right into the heart of the continent. They thus avoided the mountain barrier of the Appalachians and were able to extend their territories, not only as far as Lake Superior, but also southwards down the Mississippi to the Gulf of Mexico. Thus, through a large area they established their chain of fur and trading stations and forts. By this means they hoped to cut off the English colonists, who were established along the eastern seaboard, from further expansion westwards. This all too rapid expansion weakened the French power in America, for these vast regions were far too great for the comparatively small French colonial population to develop.

During this period, the French were also acquiring possessions in India. The development of the French power in that country was largely due to Dupleix, who rose to the position of Governor-General in 1742. He saw that a purely commercial policy was insufficient, and that it was impossible to avoid interference in native affairs. European governments did not yet understand the importance of foreign expansion, however, and Dupleix was not supported by his home authorities. After his recall on account of his defeat by Clive, the French power in India gradually declined.

In Africa, too, the French were gradually obtaining a foothold. In 1637 Lambert sailed to the mouth of the Senegal, and, leaving his ship at the mouth of the river, he made his way up-stream in small boats for a considerable distance. The Senegal possessions were rather neglected for a time, until, owing to the need for obtaining slaves for their newly acquired West Indian islands,



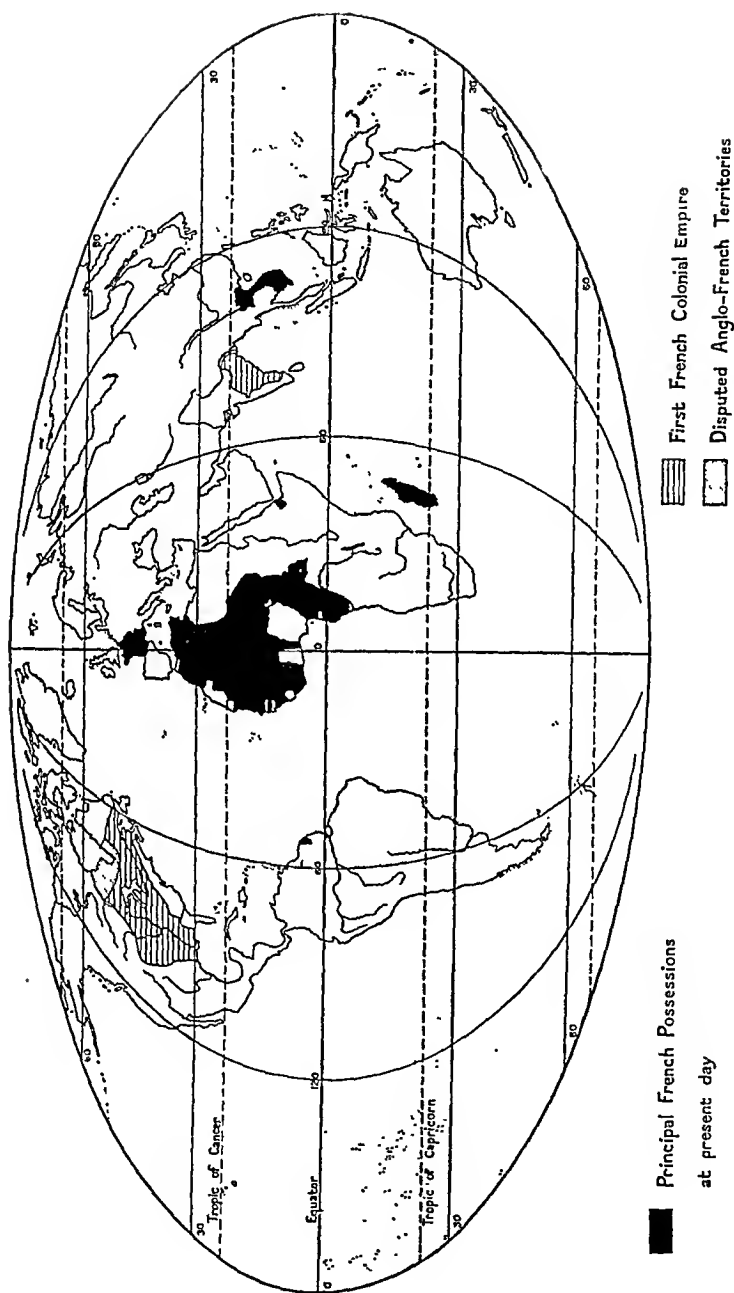


FIG. 23.—COLONIAL EXPANSION OF FRANCE.

During the seventeenth and eighteenth centuries, France acquired extensive possessions chiefly in North America and India. She lost most of these possessions, however, by the Treaty of Paris in 1763. Most of her present colonial empire was acquired during the nineteenth century, and as a result of the Peace Treaties of 1919-21 further additions were made to her territories.

the French sent out André de Brue in 1696, and he did much to expand and consolidate the West African territories. It was in the year following de Brue's arrival in the Senegal that about a third of the island of Haiti, in the West Indies, was ceded to the French. In the first half of the seventeenth century, Madagascar had been annexed, and Mauritius, Réunion, and other islands had been acquired. At the same time the French continued to expand their West African possessions until 1758, when they were, during the earlier part of the Seven Years' War, captured by the British. This, however, was only one of the many disasters suffered by the French. They were defeated in India, whilst in 1759 Wolfe captured Quebec. By the Treaty of Paris (1763) France lost Canada and Nova Scotia, as well as most of her possessions in India. She also lost the West Indian islands of Grenada, Tobago, Dominica, and St Vincent, as well as the Senegal territories. She retained, however, Martinique and Guadeloupe in the West Indies.

The general opinion is that, owing to his obsession in the matter of European expansion, Louis XIV was greatly to be blamed for the lack of support accorded to those who were anxious to advance the overseas interests of France. After his death in 1715, the financial state of France was so unsatisfactory that the very genuine desire of Frenchmen to build on the foundations already laid ended in catastrophe.

In the nineteenth century, France took a prominent part in partition of Africa, and it was then that she acquired most of her present African possessions. In 1817, the British restored to France her former possessions on the Senegal, and there then followed a period of expansion. The sources of the Gambia were discovered and the Sahara desert was crossed. After the Franco-German War of 1870 the French again turned their attention towards increasing their West African possessions. They advanced towards the Niger and in the year 1893 Timbuktu was captured. Meanwhile possessions on the coast, such as the Ivory Coast, French Guinea, and Dahomey were being consolidated or acquired. The colony at the entrance to the Gaboon estuary, originally established as a settlement for freed slaves,

was being extended. It now reaches Lake Chad and adjoins the French Colony of Cameroons, which was captured from the Germans in the War of 1914-18.

In 1830, the French captured Algiers, and thus laid the foundations of their North African Empire, which includes to-day not only Algeria and Tunisia, but also part of Morocco. The first of these regions is regarded officially as a part of France. This is the outcome not only of proximity, but also of similarity of climate; for there is little difference between the climate of the south of France and that of North Africa. The climate of Morocco, however, rather resembles that of Aquitaine. These regions are easily reached by the Mediterranean Sea, and owing to the similarity of their climate and of their products with the portions of France mentioned above, these possessions in Northern Africa are especially suited to settlers from the mother country.

The total area of the French possessions in Africa, stretching as they do from the Mediterranean on the north to the Gulf of Guinea and the Congo in the south, is almost five million square miles, with a population of thirty-six millions. It must not be forgotten, however, that, though this area includes many productive tropical regions, yet it also embraces the vast Sahara desert.

Outside Africa, the area of the French possessions is small. The total in Asia is only some 250,000 square miles, of which nearly the whole lies within the borders of French Indo-China. The French first had an establishment in this region in 1787, but it was not until the year 1862, when they acquired land from the Emperor of Annam, that they really began to colonise this part of Asia. They gradually extended their possessions until, at the present time, they include the protectorates of Tongking, Annam, and Cambodia, and the colony of Cochin-China. French explorers have done much good work on the Mekong river. Of her former possessions in India the French own to-day only a number of small trading-posts, whose total area is only about 200 square miles, and of which the population numbers only about 260,000. The chief of these posts is Pondicherry, which, apart from its historic interest, is of little importance.

The area in America, including the West Indian possessions and French Guiana, is only about 33,000 square miles, whilst in Oceania the total does not exceed 10,000 square miles

It is somewhat on Roman lines that the French develop their colonial possessions. In other words, the French do not, as a rule, make a permanent home in their dominions overseas. They go there for a time to rule or to trade, but they ultimately return to France. The French colonies are directly represented in the Chamber of Deputies and in the Senate. The representatives are elected by universal suffrage, but only French colonists and natives who are "naturalised French subjects" are allowed to vote. In the French people the sense of absolute justice and fair play is possibly not so highly developed as it is in the British, but, on the other hand, their rule is on the whole fair, and the officials enter into the lives of the natives much more fully than, as a rule, does the average British administrator. In his book entitled *France To-day*, Laurence Jerrold quotes a great English colonist as saying "The natives trust us because we are fair. The French they sometimes love."

**Language and Literature**—The invasion of Marseille, already for centuries a Greek colony, by the wild Northern tribes and the summoning of Rome to help against that invasion, might be taken as the starting-point of the French language. The subsequent campaigns of Cæsar and the Roman occupation of Gaul gave rise to what were gradually formed Roman "patois" of northern and southern Gaul—the *Langue d'oïl* of the north and the *Langue d'oc* of the south. The Celtic language was replaced by the new dialects, except in the hilly districts of Brittany, which fact goes to show clearly the effect of geographical isolation on language and customs. Even to-day the Celtic language still survives in some of the more remote parts of Brittany. The comparison of this region with our own Wales is an obvious one. The Franks from beyond the Rhine though vanquishing the Gauls in turn, adopted the language they found, and were, so to speak, conquered in their turn by it. Now language tends to become harsh in a northern and more rigorous climate, softer and more melodious in a southern. Hence the

two great divisions we have noted, so called from the sounding of the *oïl* and the *oc* (=yes). The language of Provence is still more melodious and "singsong" than that of the north. In the *Tartarin de Tarascon* of Alphonse Daudet are found not only examples of the melodiousness of the language, but a description, half fanciful perhaps, of the effect of the sunny and warm climate on the character and language of the Tarasconnais, who may be taken as typical of the Provençal people.

The north is influenced by an admixture of Germanic speech. But the north was undoubtedly the more vigorous. It gave to the Ile de France (Francia) and the northern territories its old minstrel songs, their *chansons de geste*, and their *fabliaux*, which were sung or recited in baronial halls, as they were in England. We see a geographical connection between Brittany and Britain strengthened by the common Arthurian cycle—Cornwall and Brittany being of similar geographical formation, especially along their coasts where these legends had their origin. Thus in epic poetry the north was supreme, and it was in this way that it finally supplanted the south in making its language, the *langue d'oïl*, the "French" language.

The Dukes of Orleans and of Francia (Ile de France) became the reigning power, and the north and west gradually assumed the lead. It is interesting geographically to note how the south still held its own in more lyrical, dreamy poetry, owing no doubt to climatic conditions and possibly to the influence of Italy and Spain.

We have mentioned Daudet, as a modern writer, attempting to keep alive the spirit of the *Langue d'oc*. A revival of the language itself as a literary medium has been attempted by the poet Mistral. The martial north, martial from its very position, produced later Froissart, born at Valenciennes, and Philippe de Commines, of Argentan, in Normandy, both famous as chroniclers. It is more than a coincidence that 46° N. to 50° N. have produced France's greatest chroniclers and writers. Normandy was a separate dukedom, and Valenciennes on the edge of what was, and has been in our time, the "Cockpit of Europe." It was reserved for Anjou and Touraine, in the persons of Du Bellay, Ronsard, and Rabelais, to produce the vigour of the Renaissance,

and it was Malherbe, a native of Caen, who finally stamped out provincialisms and did more to unify the French language than any other writer. The French Academy (1635) completed the work, and from this time Paris became the literary centre. It drew to itself provincials, like Corneille, a native of Rouen, but Racine and Molière were natives of the capital.

The influences of the north-west and west are represented by Le Sage, who, though his literature had a Spanish atmosphere, would be greatly influenced by his birthplace, Vannes. Victor Hugo's writings, apart from the scenes laid in Paris, are influenced, doubtless, by his birthplace, Besançon, by his youthful travels in Corsica and Spain, and by his subsequent exile in Guernsey. All of these places were likely to inspire the romantic spirit in him. George Sand has given us delightful studies of the Loire, the Indre, and of Berry. It was in the latter region that her early years were spent, and she thus became steeped in the superstitions and customs of this isolated, and therefore rather backward, district. These early influences showed themselves in her work, more especially in that of her later years. The Loire, rich in medieval châteaux, has inspired many epic and lyric poems. Tours, in the centre of this region, has become a provincial literary centre. It was here that Balzac was born in 1799. His wonderful descriptive gifts, his creative imagination, and his very real sense of "atmosphere" place him, in spite of certain defects of style, in the foremost rank of French novelists.

It has been impossible to give anything but a scanty impression of French literature. Names like those of Guy de Maupassant, famed for his vivid portrayal of provincial life, Émile Zola, the realist, and Anatole France, the intellectual progeny of Voltaire's irony and wit, will live for ever in the literature of France. What emerges is the fact that north and north-west France are the "cradles of its literature," and romantic Brittany and Normandy have inspired its best epic and lyric poetry, whilst latterly Paris, with her centralising power, has attracted to herself all France's best writers—but their works are of different character from the old romantic and chivalrous inspirations of the beautiful Loire valley and the romantic north-west.

J H S

### CHAPTER III

#### THE VALLEY OF THE RHONE AND SAÔNE

**Structure.**—The valley of the Rhone and Saône combines the advantages of a great river valley with those of a main route, connecting regions not only of political importance, but also of geographical differences which have from earliest times led to constant intercourse.

Structurally, the valley is a long trough dividing the older *massif* of Central France from the younger ranges of the Alps and Jura. The main stream of drainage is the Saône, which, however, assumes the name of its more voluminous tributary, the Rhone, after their confluence at Lyon. The enclosing mountains are of different geological origin and belong to two well-known types. On the west and north the block type prevails, with its characteristic tablelands and steep escarpments. Here lie the Cévennes with their northern extensions: the Monts du Vivarais, Monts du Lyonnais, the Côte d'Or, and the Plateau de Langres; and the Monts Faucilles and Vosges. On the east the Jura and the Alps are of the folded type.

Generally speaking, the highest land on both sides is composed of hard rock, while middle levels are of cretaceous or jurassic rock, and the valley-floor of various forms of accumulated material. In the valley of the Saône proper there are extensive areas of loess. East of Chalon-sur-Saône lies the silted-up basin of a former lake, while flood plains and, in the lower valley, deltaic and other littoral sedimentation form great stretches of alluvial soil. Hence, fertility is a general characteristic of the region, except in parts of the eastern side, where glacial deposition has made the ground pebbly or marshy.

On the whole, the valley is poor in minerals. The rocks of the Central Highlands, and even those of the Alps, are older than the carboniferous period; hence, coal is not found on

their uplands. The faulting of the valley and its subsequent silting up with alluvium preclude the existence of workable

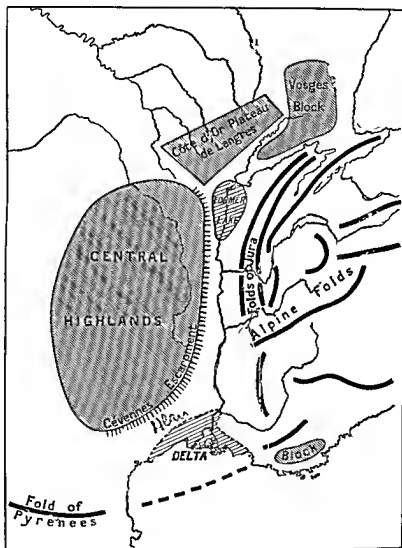


FIG. 29.—MAIN LINES OF STRUCTURE IN THE RHONE SAÔNE VALLEY.

Note the block formations on the west and north, and the fold formation on the east and south. A former lake, now silted up, is shown at Chalons-sur-Saône. The delta area is shaded. Left bank tributaries cut their way through transverse valleys.

coal seams in the bottom. The lower slopes of the bounding hills are, therefore, the only places where the mineral is found,



and there it occurs in pockets. Around le Creuzot the disposition of the seams causes the mining to be carried on at inconveniently great depths; another pocket occurs at Alais, at the foot of the Cévennes; while a third, containing a small deposit of anthracite, is found in the lower slopes of the Alps in the department of Isère. Near Marseille there is some lignite. Iron deposits occur near the three coalfields, and gold is found in small veins at La Gardette in the Isère valley.

**Physical Features.**—Physically the valley is divided into two

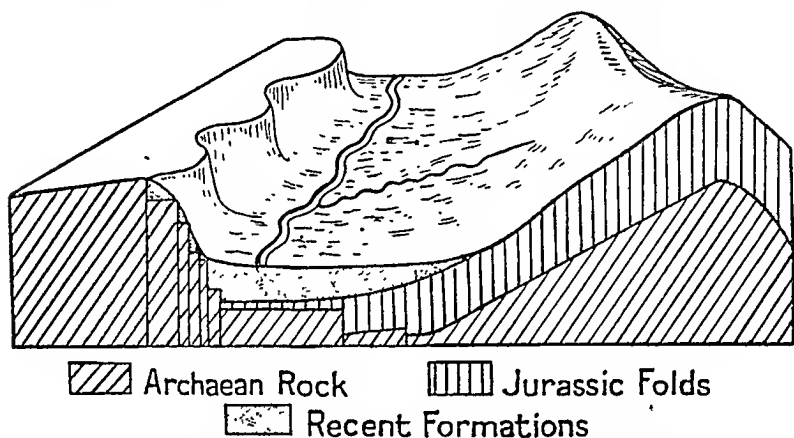


FIG. 30.—BLOCK DIAGRAM ILLUSTRATING THE STRUCTURE OF THE VALLEY OF THE RHONE AND SAÔNE.

The section runs east and west across the valley near Villefranche. Note the faulting on the west and the folds of the Jura on the east. An asymmetrical valley results, forcing the river to hug the escarpment. Hence the right bank tributaries are all torrents.

parts. The southern consists of a triangular area with Valence at its vertex and the sea at its base. It is a very complex region, with four distinct subdivisions. West of the Rhone, as far as and including the Aude valley, is the old province of Languedoc the inland part of which consists of the steep scarp of the Cévennes with the adjacent lowlands. Outlying volcanic hills once formed promontories and islands, now enclosed by an alluvial plain. One line of these hills, reaching the coast in the extinct volcano of Mont d'Agde, is the true western boundary of the Rhone delta. The streams here, insignificant as a rule, become torrents of immense volume and great erosive power in times of flood.

East of the Rhone lies another section, a part of Provence. Here the valleys which penetrate the Basses Alpes are the principal feature, the larger ones being the valleys of Aix, the Durance, the Aygues, and the Drome. Between these two sections lies the flat, dreary delta, swampy in places, sandy, dusty, and barren in others, but here and there capable of cultivation. Just east of the delta is the plain of La Crau, where the number of pebbles mixed with the alluvial soil forms a great obstacle to cultivation. Finally, there is the coast fringe, a marshy strip with a line of lagoons and salt marshes parallel to the shore, and on the whole so repellent to navigation as to give Languedoc the character of an inland region.

The Rhone brings down to the sea annually a vast amount of sediment, and the absence of strong tides and currents causes this to be deposited at the mouths. Sometimes during one of the fierce storms for which the Gulf of Lion is notorious, the sediment is piled up in a bar fronting the river. A lagoon is thus formed. In the case of the Etang de Thau, the bar was a long, volcanic island, the ends of which were reached by the alluvial plain before the middle. At the mouth of the Grand Rhone deposition proceeds so rapidly that a goose-foot delta is being pushed out into the sea and the outer clays threaten to enclose the two adjacent inlets, the gulfs of Beauduc and Fosse. When formed, the lagoons are gradually silted up by the river into salt marshes. At this stage aquatic vegetation, partly by binding the mud and keeping it from further displacement, partly by causing further accumulation in times of flood, and partly by adding its own dead leaves and stems to the soil, raises the surface above sea-level and forms new land. In this section lies the deltaic island of La Camargue, a swampy, uninhabited expanse whose only product consists of herds of half-wild cattle and horses.

The northern part of the valley consists of a wide bottom with steep, bounding slopes. From Valence to just south of Lyon the bottom narrows to an average width of twelve miles, but north of Lyon it broadens out into a fine plain some fifty miles across. Between the Upper Rhone and the Saône lies a clayey

plateau known as the Pays de Dombes, which the obstruction of rivers through lack of care in the Middle Ages converted into a pestilential swamp, but which has now been reclaimed and has become a healthy, fertile region. The encircling mountains are of different character on the west, east, and north. On the west the steep scarp of the central *massif* bears some resemblance to the background of Languedoc with its barren high ground and rushing torrents. In the north and north-west, the hills are of no great height and slope gradually down to the plain, giving the southern aspect so favourable to viticulture. On the east valleys, like those of Provence, enter the Jura. The western slopes of the Jura form a hilly, forested region, which reaches the plain in a distinct fall-line marked by a line of small towns and a railway from Bourg to Besançon.

In spite of the abrupt slopes which enclose the valley, gaps in various directions afford easy communication with the neighbouring regions. South-westward through the valley of the Aude the coast strip leads to Spain, and the Gate of Carcassonne between the Pyrenees and the central *massif* gives access to the valley of the Garonne. Between the Monts du Lyonnais and the Côte d'Or there is an easy passage to the Loire valley and the west of France, while through the Côte d'Or is a gap leading to the Yonne and so to Paris and the north-west. Other passages run through the low Plateau de Langres and the Monts Faucilles, and the famous Burgundy Gate between the Vosges and the Jura opens a way to the Rhine. Eastwards the Upper Rhone and the Isère lead to the Simplon, the St. Bernard, and the Mont Cenis passes across the Alps. Another route, of little importance to-day, but of interest as the possible route of Hannibal, follows the Durance to the pass of Mont Genève.

Geologically and historically the Saône is the main river of the valley. It rises in the wooded slopes of the Monts Faucilles, and, entering the plain of Burgundy, flows in a south-westerly direction until at Chalon-sur-Saône it reaches the western side of the valley. At this point its course lies through an old lake long since silted up and now forming a region of great fertility. From Chalon-sur-Saône it runs due south, hugging the slopes of the central *massif*.

South of Villefranche it passes its only obstruction by the gorge of Rochetaillée, so called from the work of the Roman engineers,

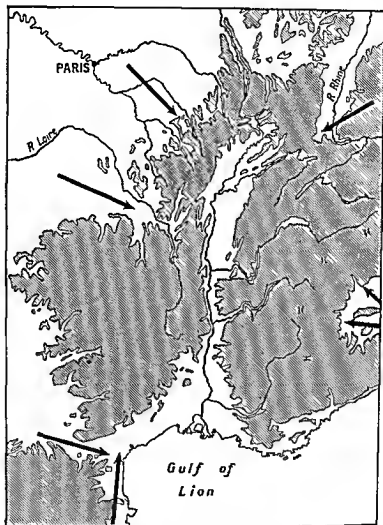


FIG. 31.—RELIEF OF THE VALLEY OF THE RHONE AND SAONE.

Showing the convergence of main routes

who cut away the sides of the gorge to widen the passage. A few kilometres take it to Lyon. So far the river has received but one considerable tributary, the Doubs. This stream rises in the Jura, flows longitudinally between two of the ranges in a

north-easterly direction as if to join the Rhine, as doubtless it once did, but at length turns westwards, piercing the Jura. On reaching the Burgundy Gate it flows through it south-westwards to join the Saône north of Chalon-sur-Saône. The gradient of the Saône makes navigation easy, and the facilities have been increased by the canalisation of the river from Corre to Lyon, a distance of 233 miles. The normal depth is 6 feet 6 inches.

At Lyon the Saône is joined by the Rhone, and the combined streams bear the name of the latter. The Rhone rises in the glacier of the same name in the Swiss Alps, and flows as a turgid, glacial stream into Lake Geneva. It leaves the lake as a clear stream, only to be sullied later by the glacial affluents it receives. In this part of its course it is usually a torrent, now flowing swiftly down the longitudinal valleys of the Jura, now leaping through transverse valleys, or *cluses*. On reaching the plain, it is joined by the Ain, which flows through a longitudinal valley in a simple course. From the confluence with this tributary it is navigable, except in times of unusual flood.

The junction of the Rhone with the Saône is indeed the yoking of the wild bull with the timid sheep, and the contrast between the rivers has been noted by writers of various ages. Thus, Seneca (*Apocolocyntosis*, vii. 2):—

Vidi duobus imminens fluviis iugum,  
quod Phœbus ortu semper obverso videt,  
ubi Rhodanus ingens amne prærapido fluit,  
Ararque dubitans quo suos cursus agat  
tacitus quietis alluit ripas vadis.

In modern times, Byron writes of "the blue rushing of the arrowy Rhone" (*Childe Harold*, iii. 71), and Michelet describes the Rhone as "un taureau furieux descendu des Alpes et qui court à la mer." Cæsar, who had an unerring eye for topography, was struck with the contrast, and wrote: "Flumen est Arar, quod per fines Æduorum et Sequanorum in Rhodanum influit incredibili lenitate, ita ut oculis, in utram partem fluat, iudicari non possit." (*Bellum Gallicum*, i. 12.) The difficulty expressed here may refer to the curious phenomenon which occurs at Lyon in the spring. The floods of the Rhone rush down with such

force that the waters of the Saône are dammed back and, rising, appear to be flowing upstream. 20802

The course of the combined rivers is now due south. Between Givors and Valence it lies on the silted-up bed of an ancient fjord. Just before reaching Valence the river is joined by another glacial stream, the Isère, which helps to swell the amount of sediment borne down by the river. At Montelimar the valley widens out and the deltaic plain begins. Through this the river flows a middle course, to be joined at Avignon by another Alpine tributary, the Durance. At Fourques the river divides, the main stream, or Grand Rhone, flowing south-east to the Gulf of Fosse, the Little Rhone passing south-west to the sea near Aigues Mortes. Each of these principal mouths has several smaller ones known as *graus*. From Lyon downwards the rapidity of the current and the shallowness of the stream are a great hindrance to navigation, which, however, is carried on to a larger extent than is generally supposed. So great is the deposition of sediment that the streams are frequently blocked, and the navigation of the Grand Rhone is kept open only by means of an artificial mouth known as the Canal de St. Louis. Ports on the delta, like Arelate, become inland towns after a time, the only ancient port to survive being Marseille, which has escaped the effects of silting owing to the east to west flow of such current as there is.

**Climate**—The physical division of the valley coincides with an equally distinct climatic division. North of Valence the valley, sheltered by the central *massif* from the moderating Westerlies from the Atlantic, has not the characteristic maritime climate of the valley of the Loire in the same latitude. From the sources of the Saône to Valence the mean annual temperature increases from  $50^{\circ}\text{F}$  to  $53^{\circ}\text{F}$ —which are the figures for Cornwall or Normandy. But while the annual range in Cornwall is  $16^{\circ}\text{F}$  and in Normandy  $20^{\circ}\text{F}$ , in the Saône valley it is  $40^{\circ}\text{F}$ . The mean July temperature is as high as  $73^{\circ}\text{F}$ , while in January the mean is as low as  $33^{\circ}\text{F}$ . The extreme northern end shares with the district between the Vosges and the Meuse the distinction of having the lowest winter and the highest summer temperature in France. This is approaching the transitional

## THE VALLEY OF THE RHONE AND SAÔNE 101

type of climate which prevails in the Upper Rhine valley and in Western Germany. The likeness is increased by the incidence of the rainfall in summer and the occurrence of violent storms in

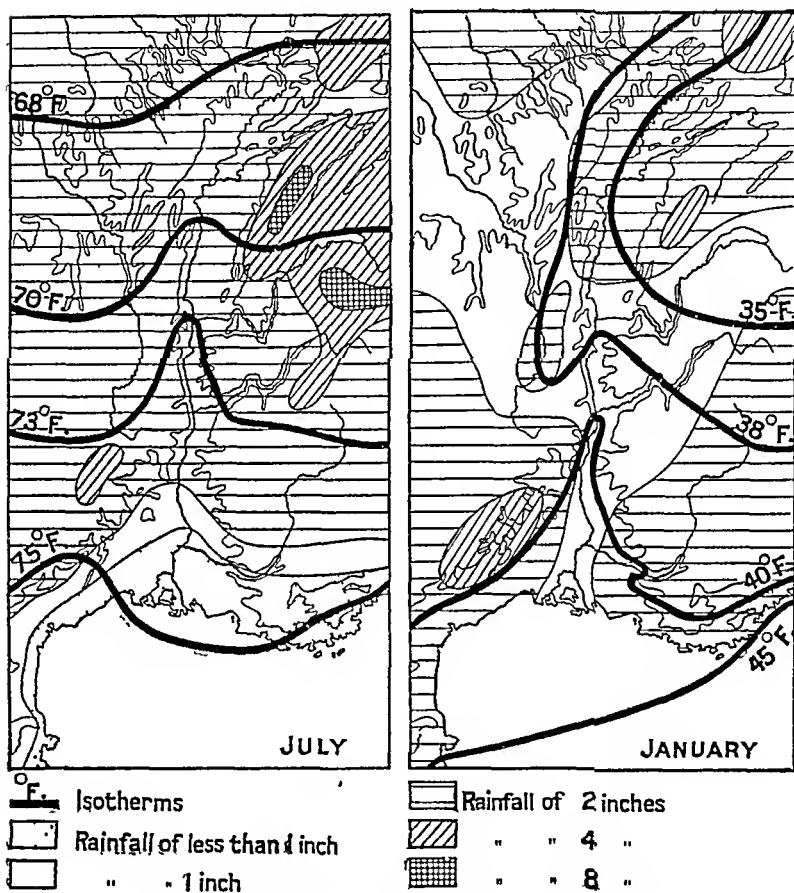


FIG. 32.—TEMPERATURE AND RAINFALL IN JULY AND JANUARY

the same season. The average fall is 20 inches and the number of days of rain is 115. North of Mâcon the winds prevail from the west, and the rains are convectional, but between Mâcon and Valence, under the lee of the central *massif*, the winds sweep up or down the valley according to the season, and

here the rains fall in the late summer or early autumn. On the slopes of the Jura relief rains fall in summer only. It is thus clear that the direction of the winds and the rainfall depend on the surface relief.

South of Valence the climate changes entirely. An old local saying expresses this: *A Valençe le Midi commence*. Here is found the real Mediterranean type, which occurs on the west side of all continents between lat  $35^{\circ}$  and  $45^{\circ}$ . On the borderline between the belt of S W Anti trades and the horse latitude calms, the region is brought by the annual swing of the wind belts now into one, now into the other of these areas. In winter, it lies within the *regime* of the Westerlies, which bring moderate rain from the Atlantic and keep the temperature mild. Local causes often upset this wide system, however. The warmth of the winter sun on the coast often creates a centre of low pressure over the Mediterranean which draws the winds south. The western side of the deltaic region, e.g. at Montpellier, frequently derives its wind from the N W, while a strong, bitterly cold north wind is sucked down the valley, bringing a period of frost. Although the *Mistral* (i.e. *magistral* = masterly), as this wind is called, is popularly regarded as an unpleasant wind, yet the frost brought by it is of great benefit in checking and reducing the malarial germs which abound in the deltaic swamps. In the Alpine valleys of the left-bank tributaries, a descending wind, known as the *Foehn*, has a warming effect, and clears the snow off the slopes even in mid-winter. This wind, common elsewhere in the Alps, is rarer in the Rhone valley. These locally influenced winds blow from the land and bring no rain, hence the number of days of rain is small (55 at Marseille), though the rains are heavy when they fall. It is these heavy rains that turn the trickling streams of Languedoc into mighty rushing torrents.

In summer, when the region is brought within the horse latitude calms, the weather is hot and dry. The muddy surface of the Camargue and of most of the deltaic region is turned to dust, which blows about and helps the wind in the process of drying the skin. The swamps become quite stagnant and



offer a prolific breeding-ground to mosquitoes. As in the Campagna of Rome and in other low-lying districts in the Mediterranean region, there is a constant tendency to malaria, which is only checked by the winter visits of the *Mistral*. The heating effect of the sun at this season on the northern part of the valley produces a low-pressure area, which causes a scorching wind from over the Mediterranean. This blows up the valley and increases the discomforts and ill-effects of the summer heat both for the inhabitants and for the vegetation.

The differences of climate over the valley have an important effect on the river itself. The incidence of the rainfall in the summer in the northern part of the valley causes summer floods, the autumn fall in the Lyon district brings another rise in the level of the water, while the melting of the Alpine snows in spring produces another period of flood. Hence, the river is kept at a high average level most of the year, though the geological conditions lead to an immediate run-off of the rain that falls.

**Vegetation.**—The division of the valley into two climatic regions naturally causes a similar division in vegetation. North of Valence flourishes the park-land type so characteristic of Western Europe. Deciduous trees, especially the beech, stand singly or in clumps (which are sometimes expanded into woods) on a carpet of grass which keeps its green throughout the year. This is mainly the cultivated part. On the slopes of the Central Highlands, where limestone comes to the surface, the thinness of the soil often causes bare patches of rock to appear. Near the river, the strip liable to floods forms natural meadow of luscious grass which is used for grazing cattle. On the highlands the deciduous trees grow more abundantly, but at last give way to conifers. Thus, the Vosges and the Jura are forested regions. The contrast between these and the Côte d'Or is not entirely due to height, but also to aspect and rainfall; for, while they face west or north-west and derive relief rains from the Westerlies, the Côte d'Or looks south-east and so gets the full heat of the summer sun, which contributes largely to the ripening of the grapes. The high summer temperature causes a preference in

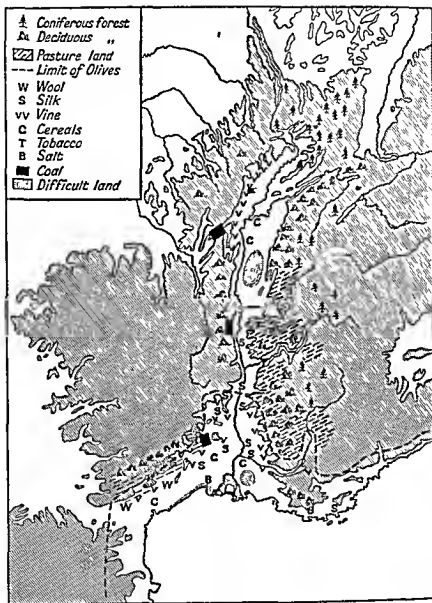


FIG. 33.—VEGETATION AND ECONOMIC PRODUCTS.

this region for crops which, like the vine, can bear a cold winter and ripen quickly under the heat of summer.

South of Valence the Mediterranean type of vegetation prevails.

The regulating factor of the type is the parching heat and drought of summer. Only plants which can adapt themselves to growing in the winter period of rain and can protect themselves against excessive evaporation in summer can thrive. Protection against the sun is effected by means of thick-skinned, wax-coated leaves or by replacing leaves at this time by green stems. Such are the arbutus, the laurel, myrtle, oleander, and olive. At low levels the vegetation is of the scrub type, usually known as maquis, and when wild consists of dense thickets bound together by creepers. A characteristic of these shrubs, which makes them sought after for gardens, is the presence in them of aromatic substances and pungent scents. Tree life is almost confined to high levels, and the species are, like the shrubs, mostly evergreen. The cork oak is used in connection with the wine industry, and other species of oak yield acorns, with which pigs are fed, and materials for tanning leather. Pines yield firewood, resin, and timber for shipbuilding. Where the limestone lies at the surface and consequently the soil is thin, areas of special vegetation occur. These are known as garigues. Here grow impoverished varieties of the evergreen shrubs, such as the sage, the juniper, thyme, and lavender. Bulbous plants, like the asphodel, are found with them. An indigenous palm, besides many exotic ones, prove the close relation between this region and the north coast of Africa, while the rapid spread of the cactus and agave on their introduction from the deserts of America indicates the affinity between the vegetation here and the desert flora. The garigues are useless to man and barely support that characteristic Mediterranean animal, the goat.

**Agriculture.**—Thus far the valley has been described as Nature made it. The true task of the geographer is, however, to examine the effects of the environment provided by Nature on the human inhabitants, and the reaction of those inhabitants on the environment. As has been said above, the alluvial nature of the soil of the valley-bottom makes for fertility, and in the early days of the history of the valley, when agriculture was the only peaceful occupation, the rich yield of crops, especially in the lower valley, led to the growth of a large population. If

one may judge from signs such as the vastness of the amphitheatre at Nîmes, towns in the south must have had a greater population than now. Even to day, however, the valley is an agricultural rather than an industrial region.

Cereals form an important part of the diet of the people, especially in the Mediterranean area, where meat is scarce. The principal crops are wheat, maize (introduced from America), rye, buckwheat, and millet. The hot, bright summer causes the crops to ripen early, though they are usually sown late. The farmers, unlike those of the Loire valley and other places with a more maritime climate, do not fear the loss of their crops through excess of rain and lack of sunshine. Wheat, maize, and rye are grown throughout the region, the last giving the "black bread" which figures largely in the food of the peasants. Buckwheat, which is not a true cereal, and millet, which is a product of the Mediterranean region as a whole, are inferior as food, but will thrive in poorer soil and in conditions of greater drought. Hence, they are almost confined to the lower valley. The excessive heat of summer in the lower valley causes the grass to die away in that season. This has given rise to the custom—known as transhumance—of driving the sheep and cattle up to the alps, or hill pastures, at the beginning of the hot season, and of driving them back to the plain in the autumn. Climate and vegetation thus combine to produce a class of semi-nomadic people in the midst of a settled civilisation. But the absence of animals in summer and the restriction placed on their numbers by their migratory life causes a shortage of butter and other fatty ingredients of the normal European diet. Nature has compensated for this by providing the olive tree, which yields in its oil the fats necessary to the diet. Sweet chestnuts and other kinds of nuts are also cultivated and used as food for the same reason. Visitors notice the important part played in meals by oils, figs, almonds, and other fruit, and beans, the last replacing cereals in the more barren districts. Olive oil and fruit are grown in excess of the local requirements in the south and are exported, the first to all parts of the world, the second to the United Kingdom, Northern France, and Belgium.

The chief economic crop, however, is the vine. In the south, the vine is Nature's compensation for the drought of summer, and here again is seen another fine adjustment of her delicate mechanism. When the heat has reduced the streams to stagnant pools, and when other sources of water have dried up or become dangerous for drinking, man's thirst is augmented by the increased evaporation and irritated by the flying dust. Just at this period, however, the grape ripens and yields its wine as a substitute for water. The vine is, therefore, a natural crop in this, as in all Mediterranean regions. Languedoc produces a large proportion of the wine output of France, but the north-west corner of the valley yields the famous Burgundy. The industry was introduced by the Emperor Probus in the third century A.D. into this district, where the bright, hot summers and the advantages of aspect and drainage make the Côte d'Or ideal for viticulture. Dijon, which is a meeting-place of routes, is the centre of the wine trade and the natural chief town of the district. It was the capital of the old province of Burgundy. Beaune, Nuits, Chalon-sur-Saône, and Mâcon are also wine towns, the first two giving their names to well-known brands of Burgundy. The vintages of the Côte d'Or are world-famous, and the valley as a whole is only rivalled as a wine-producing area by the adjacent valley of the Garonne. Great ravages were caused among the vineyards in 1869, 1873, and 1874 by the attacks of a disease known as the *phylloxera*, but a more serious blow to the wine trade has been dealt by the development of wine production in Australia and South Africa and by the introduction of prohibition in the United States.

The mulberry, the leaves of which feed the silk-worm, grows in the south. It is cultivated chiefly in Provence around Avignon. Another shrub, the tobacco plant, is grown in the valley of the Isère, where it is protected from the *Mistral* and gets a good supply of water from relief rains and irrigation. The plant is cultivated to supply the requirements of the state monopoly in tobacco, but the leaf is of inferior quality, and is used chiefly by the poorer classes who are unable to afford the superior foreign tobacco, since the latter is inflated in price by the heavy

customs duties Flowers are grown in quantities in the south, especially in Provence, since the colour loving people are naturally led to this form of culture, and the climate, especially in winter, is favourable to the growth of the plants. Winter flowers are exported to Northern France and to some extent to England.

A noticeable feature of the agriculture in the south is the intensity of cultivation and the use of hill terraces.

**Industry**—The closest interplay exists between geographical conditions and the occupations of the people. Since the special climatic circumstances of a Mediterranean environment have been unusually favourable to the cultivation of the mulberry in the south, the natural result has been that the most important manufacture is silk. The silk-worm is not indigenous, but was introduced in 1440. The raw material, as has been said, is chiefly produced in Provence, but the amount obtained in the valley is no longer sufficient for the needs of the weaving industry, and large quantities are imported from Italy and the East via Marseille. The head quarters of the manufacture of silk cloth is Lyon. This is partly due to industrial inertia, for Francis I, after his conquest of Milan in 1515, supplied by the introduction of Italian weavers the element of skill that was needed to make the industry flourish, and partly to the superior position of Lyon at the meeting-place of great routes. The effect of the latter factor, combined with the presence of power, has made St Étienne into the second in importance of the silk towns. Originally a village of some slight strategic interest only, and situated in the valley of the Furens which leads to the Loire, St Étienne, like Manchester, has sprung up into a great manufacturing town. Its growth began with the discovery of a small pocket of coal.

A feature of the silk industry is that it has remained individualist in spite of the tendency of modern manufacturers to adopt the factory system. The reasons for this are partly historical and political and partly geographical. When signs of the concentration of workers in Lyon and St Étienne appeared, the factory owners, fearing the results of labour organisations, deliberately

encouraged the independent spirit of the weavers and their traditional preference for domestic piece-work. The introduction of electricity has probably decided once for all against the factory system, for private looms driven by "white coal" are now established in thousands of houses in remote villages. The artistic, individual touch for which French goods are famous, and which is so different from the uniform-pattern tendency among the English, Germans, and Americans, makes itself felt above all in the silk industry, and largely contributes to the superiority of the French product.

A further result of the persistence of the individual system has been that the great centres of industry do not tend to become the foci of clusters of satellite towns, as has been the case with English cities like Birmingham and Manchester. That the use of electricity instead of coal is an important factor in this, however, is shown by the fact that coal-mining centres like le Creuzot and Alais tend to collect satellite towns and to become centres of "conurbations." St. Étienne showed similar tendencies until electric power was substituted for coal about forty years ago.

Geological causes have led to the growth of iron and steel manufactures at le Creuzot and Alais. The former specialises in heavy machinery, locomotives, and ordnance, and its position on the Canal du Centre facilitates the distribution of the heavy goods. Both towns engage in industries, such as glass-making, which always flourish in proximity to iron works and coal. Iron goods are also manufactured at Marseille, which derives its coal and iron from Alais, but also gets lignite from its own neighbourhood. Facilities for distribution are the cause of the growth of this industry. The wreckage of the northern industrial district of France by the war of 1914-18 has greatly enhanced the importance of the coal and iron trade of the valley, but naturally this will not be permanent.

Physical conditions make salt a natural product of the deltaic region, for the calm lagoons make the work of filling the basins one of little difficulty. The vegetation of the south provides it with another industry besides silk manufacture. The olives of the district yield the raw material for large productions of

soap at Marseille and Montpellier, for oil-refining at the same places, and for candle-making at the latter

The pastures of the Cévennes slopes, on which large flocks of sheep are kept, account for the production of coarse woollen cloth in fall-line towns like Nîmes and Montpellier. The former specialises in shawls, which are a characteristic article of dress in Mediterranean countries, the latter in blankets

On the slopes of the Alps and Jura the manufactures are of the "Swiss" type, i.e. chiefly watch- and cheese making, and the manufacture of soft leather gloves. The last includes the working up of ratskins and centres round the old university town of Grenoble. The pasturage of the mountain-slopes provides the raw material. Excellent Gruyère is produced in the Jura district, where the population is largely rural. Watch-making is centred in the old fortress town of Besançon, where more than half the watches in France are made. A heavy import duty protects the industry against the underselling of the neighbouring Swiss.

**Communications**—Important as the wine and silk industries are, it is as a high road of Europe that the valley derives its chief importance and has played its part in history. "The valley of the Rhone," says Reclus, "is the great historical highway of France" More than that, it is the line of communication between two important geographical regions, the Mediterranean and the north west of Europe, and along it passes the commerce arising from the interchange of the products of these two regions. Moreover, it is the meeting-place of the three European races, the Nordic, the Alpine and the Mediterranean, and it has become the means of intercommunication of the ideas developed by their divergent types of civilisation.

Lying between two great regions which present almost insuperable difficulties to transport, the valley forms a corridor for communication between the Mediterranean and the north-west of Europe. The only other land route, viz. via the gap of Carcassonne and the gap of Poitou, is circuitous and hardly easier. The banks of the Saône and Rhone are the main route from north to south. At the southern end an easy land route



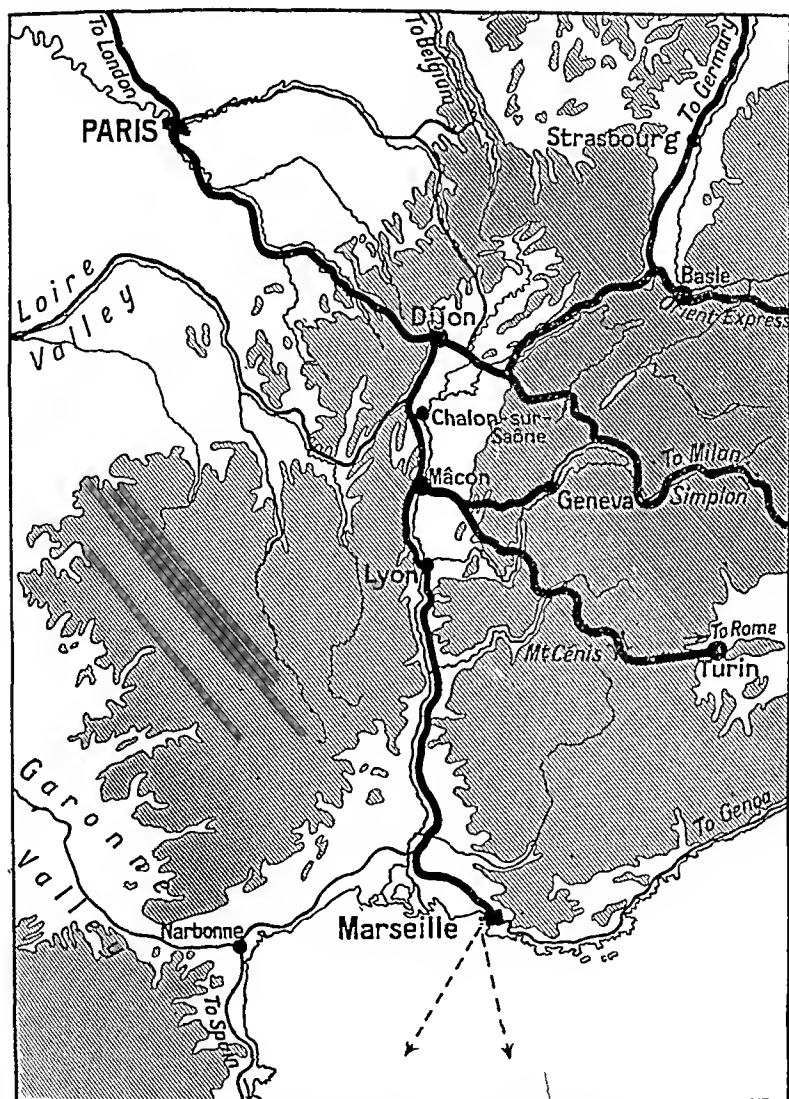


FIG. 34.—THE VALLEY OF THE RHONE AND SAÔNE.  
International and other main routes.

leads to Spain and to the valley of the Garonne, while sea-routes afford communication with Italy and other parts of the Mediterranean. Eastward from the delta, the coast-route along the

Riviera is difficult, but not impossible, though it is noteworthy that it has not been followed by any migrations of people or movements of armies. At the northern end the low hills present small obstacle to passage, and through them pass routes to the Meuse valley and Belgium, to the Marne and Seine and thus to Northern France. The shortest way to Paris, however, passes through the Cote d'Or and down the Yonne valley, and this is the route followed by the Paris-Lyon Mediterranean railway. The gap between the Cote d'Or and the Monts du Lyonnais affords easy communication with the Loire valley and the west of France. The Doubs valley in the north east gives access through the Burgundy Gate to the Rhine, thus establishing one of the oldest European routes, along which amber finds indicate its use in the Bronze Age (c. 1200 B.C.). The Burgundy Gate has been used by the Germanic invaders of France since the days of Ariovistus (58 B.C.) and has always been carefully guarded. During the Roman occupation, Vesontio (Besançon) on the Doubs was used as the key of the pass, but later Belfort, in the Gate itself, was substituted. In recent times, this passage has been overshadowed by the Lorraine Gate, farther north and leading directly from Germany to Paris.

In the middle of the corridor, there are no branches going west, but several important routes follow the left bank tributaries of the main river. Chief among these is the valley of the Upper Rhone, which leads to Switzerland, and, through the St Bernard and Mont Cenis passes, to Italy. The Isère also leads to the Mont Cenis pass and so to Turin. Farther south the Durance valley leads to the pass of Mont Genève, and offers a route which was popular in the Middle Ages. These mountain routes are easy in times of peace, but would be impossible for an army in the face of a determined and intelligent defence. Nevertheless, in early times they permitted communication between the valley and the north of Italy, and in various ages have permitted the passage of armies of invasion.

The entry of routes into the valley has determined the site of a number of the more important towns. When the routes are possible lines of invasion, i.e. the Burgundy Gate and the

valley of the Isère, a fortress bars the way. Besançon is older than the days of Cæsar, while Grenoble (Gratianopolis)

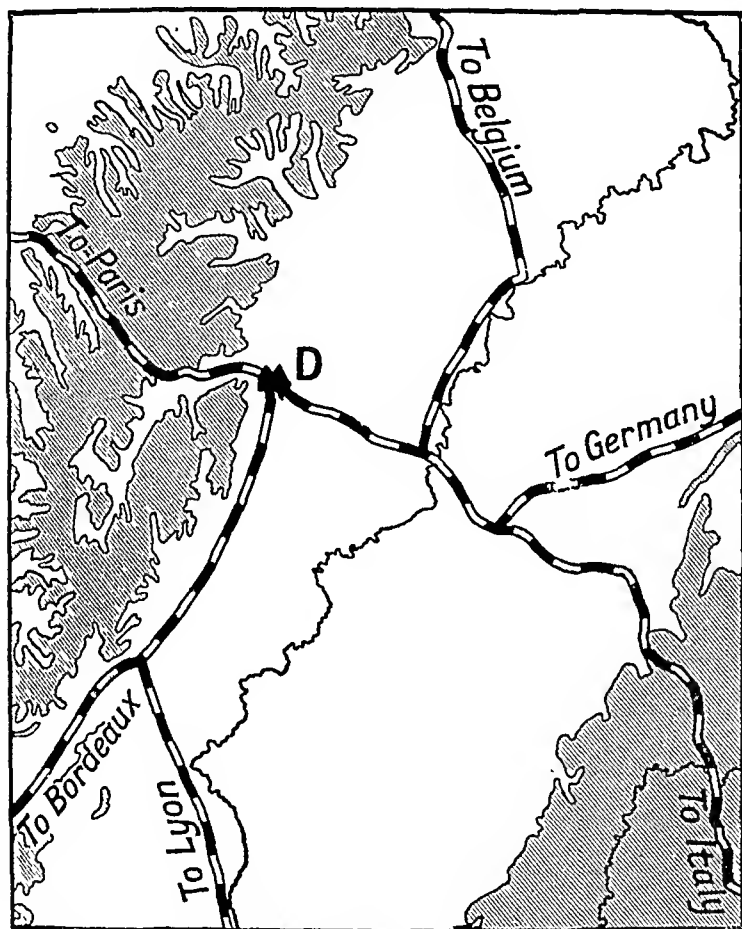


FIG. 35.—GEOGRAPHICAL FACTORS INFLUENCING THE GROWTH OF DIJON.

The factors are: (i) Position at the foot of the pass through the Plateau de Langres; (ii) proximity of a wine-producing area; (iii) meeting-point of routes.

is at least as old as the Roman occupation. In other places the town lies where the incoming route descends to the plain, e.g. Dijon. Here the principal factor is commercial need, but the strategic element should not be forgotten. More often the

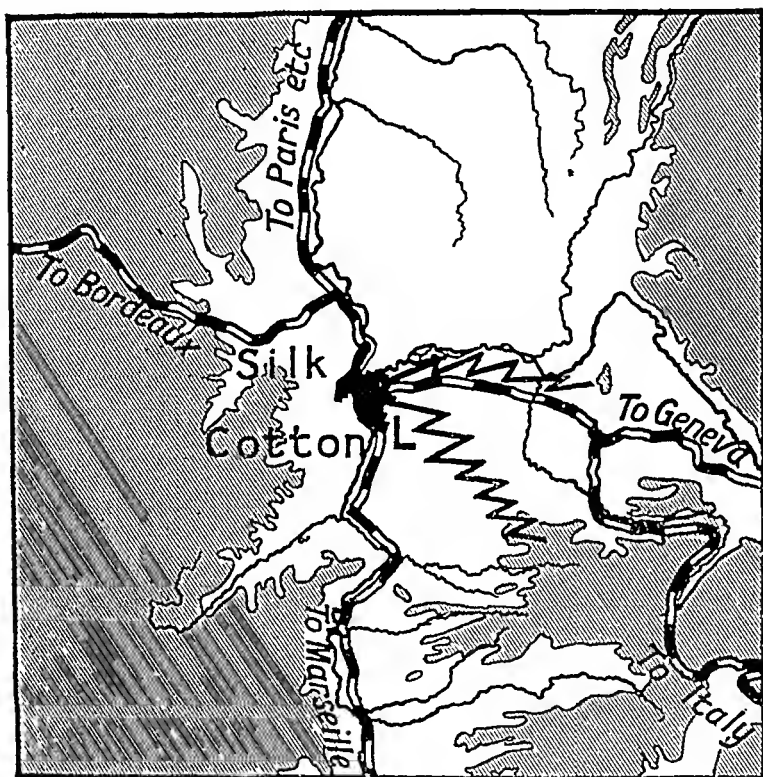
town lies on the main stream at the lower end of a tributary valley, thus commanding it both militarily and commercially and acting as an entrepôt with the valley as hinterland. The chief instances of this are Lyon, Valence, Orange, and Avignon. These towns are sometimes (e.g. Lyon and Avignon) at the junction of the affluent with the main stream, in which case they combine the advantages of a junction town with their other advantages. Chalon-sur-Saône not only commands the route followed by the Canal du Centre, but stands at the junction of the canal with the Saône.

Lyon combines in itself nearly all these advantages and adds besides a central position. Hence, it is the natural chief town of the valley and has held that position since the days of the Roman occupation, when it gave its name to the central province of Gaul. A vestige of its former predominance survives in the primatial rank of its archbishop. It still has great political influence, and it is a literary and art centre—in fact, it acts as a secondary and local capital.

The greater part of the overseas trade of the valley passes through Marseille. This port is situated just clear of the silting effects of the river mouths. In a sense, the whole valley is the hinterland of the great port, which distributes the local produce and imports foreign requirements, among which raw silk for the looms of Lyon and St Luenne is the most important. The establishment of the French in Algeria has caused a great increase in the commerce through the port, and the same effect has followed the extension of French colonial influence in Syria, Cochin-China, and other Eastern countries.

Apart from Marseille, there is no port of any size, since the absence of currents and the insignificance of the tides off the coast permit too rapid a progress in the deposition of sediment for any port to continue to exist. Arles, which was a Roman port, is now twenty-five miles from the sea. But at the west end of the deltaic region, opposite the broadest stretch of shallow water in the Gulf of Lion, there is the small fishing-port of Cette, which has a small amount of commerce in addition to its main business.

The valley is now covered by a network of railways, all of which belong to the P.L.M. company, except for a few local lines of small importance in the south. The main line from Paris



 = SOURCES OF HYDRO-ELECTRICITY.

FIG. 36.—GEOGRAPHICAL FACTORS INFLUENCING THE GROWTH OF LYON.

The factors are: (i) A strong defensive site between the junction of two rivers; (ii) central position in a great valley; (iii) strategic position just beyond the narrows of the valley; (iv) the junction of routes over the Alps with the great main highway of the valley; (v) centre of a productive district; (vi) meeting-point of two geographical regions; (vii) and in modern times easy access to sources of hydro-electricity.

enters the valley a few miles north-west of Dijon, which is an important junction. One branch runs north to Belgium, another north-east to the industrial region of the Sarre, a third passes up the Doubs valley to Basle and thence through the valleys of the

Rhine and Danube, while a fourth leads to Switzerland and Italy. These are all great international routes. The main line continues south from Dijon, following the right bank for strategic reasons as far as Lyon. Then it crosses to the left bank, which it follows as far as Arles, where it turns south-west to Marseille and so on to the Riviera. At Ventimiglia it joins up with the Italian line to Genoa and Rome.

Another branch, leaving the main line at Lyon, follows the right bank to Nîmes, whence it runs west to Narbonne. There it joins the Spanish east-coast railway for Barcelona. The different gauge of rail used in Spain prevents through traffic. The French line continues through the Gate of Carcassonne to Toulouse, Tarbes, and Biarritz. All these lines are served by express through trains, which provide quick and luxurious travel. Marseille is reached from Paris in 12 hours 30 min., Rome in 26 hours, Geneva in 12 hours, Barcelona in 19 hours.

The river is connected by canals with each of its four great neighbours, thus allowing the transport of heavy goods to be undertaken more cheaply than by rail. The Canal du Midi does not, however, make actual contact with the Rhone, but connects the Garonne to the Aude and passes thence to Agde, on the extreme west of the deltaic region. North of the Central Highlands, the Loire is linked with the Saône by the Canal du Centre, which passes through the industrial area of le Creuzot and negotiates the extension of the Cevennes between the Monts du Lyonnais and the Cote d'Or, reaching the Saone at Chalon-sur-Saone. The importance of the waterway to the factories of le Creuzot has already been mentioned. The Seine is reached by the Burgundy Canal, which joins the Upper Saone to the Yonne through the Cote d'Or. Finally, a canal from the Doubs near Montbéliard joins that river with the Rhine valley, and at Strasbourg turns west into the valleys of the Meuse and the Moselle.

Fitted by Nature both as regards position and relief to be a great high road, and improved by man to serve that purpose with every means at the disposal of modern civilisation, the region is a veritable international cross-road and meeting-place, and it is

significant that the League of Nations has chosen the nearby Geneva as its head-quarters.

**The People.**—The dawn of history found the lower valley peopled by tribes belonging to that race whose proper habitat is the Mediterranean. Anthropological remains show that they were not the first inhabitants, but their forerunners were probably few and restricted to certain areas. The invasion of the superior Alpine race just before historical times dispossessed the Mediterranean race of the upland regions, but the latter had, before this invasion, so completely adapted themselves to the Mediterranean climate that they tended to survive wherever the effects of summer drought and winter rains were most marked. The climate of the lower valley did not attract the northern races, while the flat plain did not please the colonial Greek or the Phœnician trader. Doubtless, too, its malarial swamps acted as a deterrent on prospective settlers.

The Romans, however, found the locality congenial. One of their earliest possessions, it long retained traces of Roman civilisation. Doubtless there was much intermixture of Roman and native, but they were of identical race, and traces of blending cannot be discovered. In later times, the Germanic invaders of the Roman Empire merely passed through the lower valley, moving on to more congenial climates. The Moorish freebooter of still later days was of Mediterranean race and no doubt found the climate to his liking. But the low, marshy shoreline did not suit his maritime habits, and he preferred the creeks and natural coast fortresses of the Riviera. Hence, though affected by the great movements of peoples in Southern Europe and held in subjection now by one nation, now by another, the lower valley has seen no important displacement of its inhabitants, and the descendants of the ancient Mediterranean race still form the main element of the population.

In appearance, the people are short, slender, dark complexioned, and long headed, differing especially in this last feature from the stocky, round-headed Alpine race of the Central Highlands. Forced by the circumstances of their environment to habits of industry and thrift, they are induced

by the brilliance and warmth of the sun to assume a vivacity of nature which distinguishes them from their compatriots. Gay and laughter-loving, they are quick tempered and vindictive. Artistic in temperament, they love bright colours in dress and in the external decoration of their houses. The lightness of architecture and colour, which makes a house look too ornamental and striking in the subdued light of the British Isles, gives a picturesque appearance under a Mediterranean sky.

The climate encourages them to an outdoor life, and breeds a gaiety and love of the picturesque which finds expression in various forms of popular pageantry, such as carnivals and flower shows. Love of flowers is natural in a country where the physical elements oblige the peasant to substitute intensive culture of small plots of land for the more extensive system followed in other countries.

Although they live in a deltaic region, whether from race tradition or from the visible proximity of mountains, or, as is commonly said, from the influence of the *soleil du Midi*, they are gifted with a poetic talent which inspires them to improvised song, a gift which is accurately described in the neighbouring Corsican by Mérimée in his well-known novel *Colomba*. Besides, they are endowed with an imagination which so often carries them beyond the limits of truth as to make them the butt of the northern Frenchman. This weakness is the chief motive of Daudet's *Tartarin de Tarascon*, which, if it is a caricature, has the caricature's value of emphasising the important features at the expense of the minor ones.

These innate literary qualities, together with the remains of their heritage of Roman civilisation, caused the early growth of a native literature. A special form of neo-Latin was developed, the Provençal, and is still spoken locally. It is a good vehicle for lyric poetry, and in the early Middle Ages refined compositions became fashionable among the gentry. The verse was also composed by professionals, the famous troubadours. Competitions known as "courts of love" were held periodically, and the highest nobles took part in them. The Albigensian Crusade crushed the social life of the region, and with it the



literature which formed an important part of the system. In modern times, the poet Mistral has tried to revive Provençal literature, but without marked success, and the only real survivals are the popular folk songs and the dances, notably the *farandola*, which still linger among the peasantry.

Yet the Mediterranean race is not altogether devoted to the lighter side of life. It has certainly produced great individuals, and, though no one of universal fame has had his origin in the lower valley, Napoleon and Garibaldi (Nice) were born not far away. In truth, the spirit of the race is individualistic. This is perhaps due to the physical character of the land, which restricts a man's extent of property. During the Revolution, few towns outside this region displayed such individuality as Marseille, and during the war of 1914-18 the people of this district marked themselves off from the rest of France by showing strong defeatist tendencies.

The dryness of the climate, and perhaps the absence of extensive timber forests, have led to the general use of stone for house building. The love of bright colours accounts for the many gardens. The land, except where it is hopelessly barren, shows every mark of careful cultivation in plots and terraces, reminding the traveller of similar horticultural-industry in China. Like other peoples of the Mediterranean region, the inhabitants of the lower valley live chiefly on cereals and beans cooked in various ways and dressed with oil and mixed with greens. Meat forms but a small part of the normal diet. Among the poor chestnuts are an important part of the fare. Even among the poorest wine is the principal drink, owing to the danger incurred by the use of the stagnant waters of streams and lagoons and to the cheapness of the liquor. Although the weather is normally fine and the greater part of life is spent out of doors, yet there are no indigenous field sports. This may be due to the age-long absence of animals of the chase, since field sports are for the most part a mimicry of hunting. Most of the leisure hours are spent in promenading, or in enjoying the shade of trees and shrubs planted for the purpose. This outdoor life gives rise to a low standard of indoor comfort as compared with the English

standard, but it also affects the external decoration of houses and the arrangement of gardens in a way unknown in this country

The people of the upper valley are quite different. At the earliest time of which any historical account exists, the upland districts were inhabited by the dark, round-headed Alpine race, while the lowlands were peopled by a mixture of that race and the fair, tall, long-headed Nordic. The latter had begun in the dim past, and still continue to this day, a migration sometimes slow, steady, and peaceful, sometimes violent, outwards from the shores of the Baltic. Becoming absorbed in the population of their new home in the Upper Valley, they have endowed it with Nordic characteristics to a degree which varies according to the relief of the land and its accessibility from the North. It is probable that the invaders found a comparatively dense population by the banks of the Saône, and that there the Nordic element after a time became absorbed in the more numerous Alpine race. But farther east, where Nordic intermixture had begun from earliest times, on the slopes of Franche Comté, the effects of this invasion are still visible in the height of the people, the tallest in France, in their lightness of complexion, and in their preference for the Germanic system of country life. Little trace remains of any Roman element, and the basis of the population, therefore, consists of a mixture of the Alpine and the Nordic races.

In mode of life, three subdivisions are distinguishable: the Saône valley-bottom, with its intense culture and its great industries, the wooded slopes of the Jura, and the hilly district of Savoy. In the first, life is not appreciably different from that of the Seine valley. Large towns, centres of the wine trade, exist for the most part along the foot of the escarpment, while in the country-side scattered farms and homesteads are the rule. The chief agriculture in the north is vine growing, and the making of wine is the chief industry. In the Jura, the peasants are variously occupied in cutting timber, in pasturing animals, and in growing corn in favoured places. There are no great industrial centres, though watches and other kinds of delicate machinery are produced. This is the most continental part

of the valley, and the people are often faced with great cold in winter. The rural population tends to gather in "hams" on the Germanic system.

In Savoy and Piedmont, the population lines the bottoms of the many valleys, tilling the soil where it exists and producing a great variety of crops. *Transhumance* is practised here, as in Provence. Villages tend to cluster about crags for the protection they needed in days gone by, though a number of scattered homesteads exist. A special feature of the landscape is the *chalet*, or mountain cottage. A great deal of domestic manufacture goes on, and this is aided by the development of "la houille blanche" as a driving-power.

In character, the people differ greatly from the inhabitants of the lower valley. The mixture of Nordic and Alpine races gives a love of independence and impatience of authority which has made these people play a leading part in the political changes of the past century and a half in France. In their system of industry, too, they show their independence of spirit by their rejection of the factory system. Protestantism in religion is ever on the increase, while in the lower valley Roman Catholicism is natural to the more artistic nature of the people.

**History.**—In prehistoric times, the valley was certainly known to the Phœnician traders, who obtained amber from the Baltic by this route. But no settlements are actually known to have existed. Some centuries before the Christian era Greek colonists, finding some resemblance in the coast east of the delta to their own homeland, settled there, possibly in some cases on the site of old Phœnician stations. Only one of these settlements, Massilia, now Marseille, succeeded in reproducing the free city-state of Greece. That Greek civilisation spread right through the upper valley is proved by the use among the Gauls of orthographic characters and coins imitated from the Greeks.

It was through the connexion with Marseille that Rome first established herself in Gaul. During the Punic wars, the Romans posed as protectors of the Greek settlements against Carthaginian aggression, made an alliance with Marseille, and so were able to land an army on the left bank of the Rhone to oppose Hannibal's

advance to Italy. A century later, when the native tribes threatened the Greek colonies, Rome supported her allies, defeated the Gauls, and established the province of Gallia Narbonensis.

The absence of a natural frontier to the north was a constant danger to the new province. In 105 B.C. two Germanic tribes, the Cimbri and the Teutones, entered the valley by the Burgundian Gate and utterly defeated a Roman army at Arausio (Orange). Three years later, however, the genius of Marius annihilated the Teutones at Aquæ Sextiæ (Aix) and averted the danger for the time. But fear of its recurrence and the ambition of Julius Cæsar, who was appointed proconsul of Gaul in 58 B.C., caused the Roman sphere to be extended. No doubt, too, Cæsar's keen eye fell on the fertility of the upper valley. Availing himself of the opportunity afforded by a migratory movement of two Gallie tribes, the Helvetii and the Boii, he posed as protector of the Gauls, brought them military aid, and, having repelled the invaders, remained, as so many have done in similar circumstances, in possession of the district he had defended. An irruption of the Germans under Ariovistus through the Burgundian Gate and their defeat by Cæsar's army strengthened the Roman hold on the valley. Using this as a centre of operations and striking at the neighbouring regions, now north, now west, one after the other, the great general brought all Gaul under Roman military occupation. A general unsuccessful rising in 52 B.C. confirmed the Roman hold, which lasted for four centuries.

The Roman occupation of Gaul illustrates the law that races expand into regions similar to their original home. The area of effective colonisation was limited to the district with a Mediterranean climate, to which the Romans were accustomed. Beyond this region Roman occupation was like that of the British in India. The upper valley was garrisoned by legions and ruled by Roman administrators, but was never a permanent home for Romans. The climatic barrier was too great.

Owing to this difference in the nature of the occupation, the lower valley is still distinctly Roman in character. As one

travels south from Valence, one realises that one has entered Roman Gaul. Roman place-names become common. Avignon (*avenion-em* = arrival), Fourques (*furcas*), Aigues Mortes (*aquas mortas* = stagnant waters), Minerve, Aix, and a score of others are of evident Roman provenance. Outside the old Roman province the names are non-Roman. It is noticeable that the sites of old Gallic towns like Gergovia, Alesia, and Vesontio—all mentioned by Cæsar—were generally chosen for defensive strength, while the new settlements formed by the Romans or taken over by them were chosen for facility of communication. It was essential for the military occupant to establish a line of posts to keep routes clear and to serve as points of refuge for troops attacked on the march. Reclus points out that the Roman towns tend to be placed two marching stages apart, especially when the road does not follow a main river. This system has been largely effaced by modern conditions of fast transport and industrial needs, and big towns like St. Étienne and le Creuzot seem never to have belonged to any line of Roman posts, but to be purely modern growths.

But the plainest marks of Roman civilisation are to be seen in architectural remains. These abound everywhere, but the most striking are the amphitheatre at Nîmes and the aqueduct over the Gard. The former, still used for occasional bull-fights, is the largest and best preserved outside Italy, and is capable of holding 20,000 spectators. The latter, which takes water to Nîmes, is a vast construction illustrative of the solidity of the Roman mind and of the cheapness of the labour employed.

The scale of many of the Roman constructions, among other pieces of evidence, tend to show that many towns in the district must have had larger populations under Roman rule than they have at present. Reclus attributes this to the deterioration of the healthiness of the district, owing to the greater stagnancy of the marshes and the consequent greater pestilential effects following on the embankment of the distributaries of the Rhone.

After the fall of the Roman Empire, the valley was overrun by Germanic invaders. The Visigoths, on their departure from Italy, passed through the lower valley, but preferred to move on

to Aquitaine and Spain, shunning the Mediterranean climate, as the Lombards did in Italy. The upper valley was invaded by the Burgundians, who settled in it. Although it was at first a great Burgundian kingdom, stretching from the sources of the Saône to the sea, it afterwards suffered from internal troubles and was dismembered either by loss of territory to the kings of France or by the separation of districts like Savoy and Franche Comte from each other. Thus was a period of great disaster. The chaotic state of Northern Europe reduced the value of the Rhone valley as a trade-route, and the prosperity of the thoroughly Romanised lower valley was destroyed. Shipping deserted ports like Arles, and the ports themselves became silted up by the river.

The invasion of the Moors in the eighth century was another blow. The wave of Moslem aggression had, however, spent itself, and the attacks on the coast were little more than piratical raids. A few isolated strongholds on the Riviera were the most serious attempts at settlement, and the only real mark of their former presence remains in the name of the *Monts des Maures*, east of Marseille, though ethnologists hold that traces of Moorish blood exist in the inhabitants of the lower valley. But the attacks, if they did nothing more, effectively put an end to such trade as remained to the old Roman ports.

Although Roman civilisation died hard in towns in the lower valley, like Nîmes, it was at last destined to perish, because it was like a delicate, cultivated flower among the vigorous weeds of the barbarian neighbours. The old danger of invasion from the north reasserted itself, however, and Provençal culture was destroyed by the Albigensian Crusade of 1229, after which Languedoc was united to the kingdom of France. Meanwhile, the upper valley had been encroached upon, and by 1260 had lost all its territory west of the Saône. The next century saw it dismembered, the region round Dijon made into a French duchy, and the two parts of the valley politically separated.

The old connexion between Provence and Rome still existed in the fourteenth century, for during the papal schism of 1305-1411 the popes fixed their head-quarters at Avignon, and the town

remained a papal possession till the Revolution. The old papal palace is still to be seen there.

The fifteenth century saw an attempt by the dukes of Burgundy to restore the ancient kingdom and to reunite Savoy and Provence to the upper valley. This revival was due to the gradual

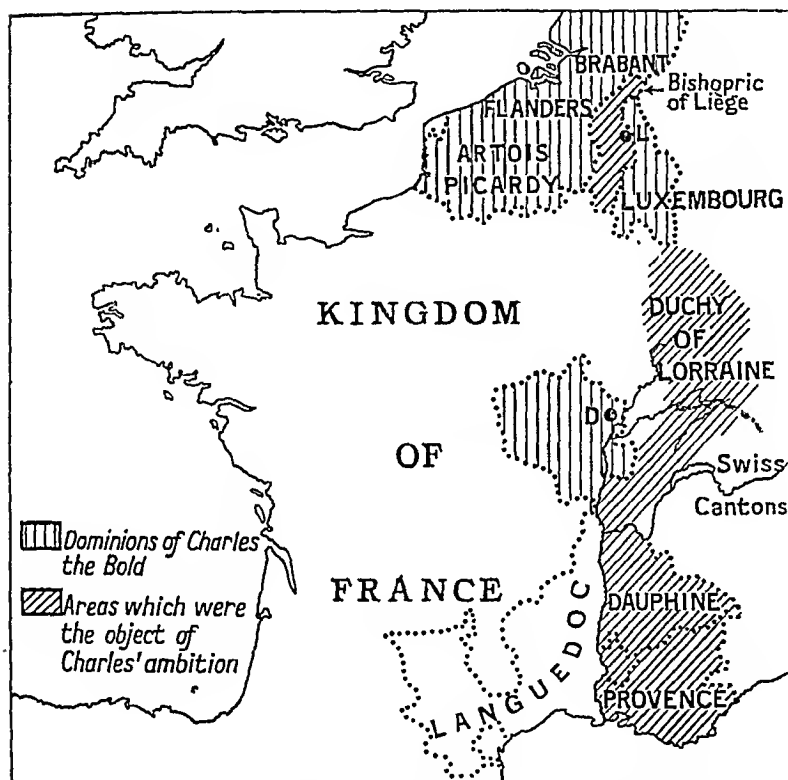


FIG. 37.—THE KINGDOM OF BURGUNDY AS CONCEIVED BY CHARLES THE BOLD.

renewal of trade. From its position Burgundy was naturally the first part of Western Europe to feel the effects of the Renaissance, and the renewed trade passing along the valley brought it to a state of great wealth. The foresight of its ruler achieved political union with the Netherlands and the valley of the Upper Rhine, thus securing the advantage of a great route together with the resources of an industrial region. Hence, the power

of Burgundy became greater than that of the kingdom of France, and the duchy was on the point of political separation from that realm when the unwisdom of Duke Charles brought about its downfall and his own death. The policy of national unity pursued by Louis XI of France was now free to restore the duchy to his effective dominion.

In modern times, the importance of the valley as a highway has undergone oscillations. The change of face imposed on Europe by the great discoveries of the end of the fifteenth century had a serious effect on the traffic which passed north-westwards through the valley from the East. Not only did trade with the East go by sea round the Cape, but the new colonies in America opened a fresh field which diverted a growing proportion of commerce westwards. With the development of Germany and Austria-Hungary both in civilised needs and in industry, the wealth of Europe moved north, and ports like Hamburg, Antwerp, and Bordeaux profited at the expense of Venice and other entrepôts of mediæval trade with the East. The improvement of transport also affected the valley by diverting overland traffic through Belgium and the Lorraine Gate to the Danube valley. The route followed by the Orient Express and the Bagdad railway is the modern substitute for the ancient Mediterranean route.

The opening of the Suez Canal in 1869 marked the beginning of a new phase in the history of the valley. Much of the traffic which had gone round the Cape now passed through the canal, and this led to the revival of the old towns and ports on the eastern route. Mail-boats from London to India and Australia call at Marseille to take up passengers and mails which thus save two days of travel. The development of French possessions in the Far East has further enhanced the importance of the route. *Even more important has been the extension of French influence in North Africa.* Algeria has become almost a part of France, sending deputies to the Chambre and being the head quarters of an army corps. Consequently a large trade has sprung up between Marseille and such ports as Algiers, Bône, Orin, and Bizerta. The opening up of routes across the Sahara will



*eventually bring the products of French Sudan and West Africa to Europe by this path.* The overflow of France into Algeria is interesting as another instance of the expansion of a people by migration into regions with a similar climate to that of their homeland.

The unification of Italy and the consequent rise of that country to economic importance has also tended to increase the amount of traffic along the valley. But national consciousness in Italy is not without an element of unrest for Southern France. As a bribe for her support of the national movement under Garibaldi, France received from Italy districts which are geographically Italian, and which are now regarded by Italians as part of their unredeemed territory. Hence, frontier disputes are a constant source of friction, and may at any time cause serious disturbance.

**Density of Population.**—The valley is one of the most densely populated parts of France, but the population is very unevenly distributed. Three regions of difficulty lie in the district, viz. the delta, the Pays de Dombes, and the highlands of Dauphiné. In these, population is less dense, varying from under 26 persons to the square mile in the delta to under 64 in the other two regions. Elsewhere, the highlands, e.g. the slopes of the Jura, the Plateau de Langres, the slopes of the Cévennes, and the Basses Alpes, are only moderately peopled, i.e. between 64 and 128 persons to the square mile. This is because the land is forested or under pasture (being unsuitable for cultivation) and its poorer yield is unable to support a large number of people.

In the cultivated parts of the valley, the return from the soil is far greater, and the land will support a larger number of persons to the square mile. Hence, in these districts there are between 128 and 192 to the square mile. Where industry is carried on largely, the population becomes denser. In four districts, viz. along the Saône from Dijon to Lyon and thence up to Grenoble, from Valence to Avignon, round St. Étienne, and in the lowlands of Languedoc around Nîmes, Montpellier, Alais, etc., the density rises to between 250 and 500 persons

to the square mile. The maximum density occurs round the three towns of Dijon, Lyon, and St Etienne.

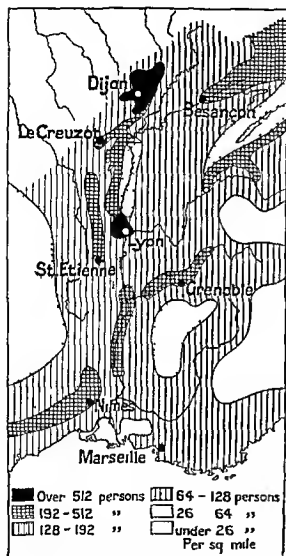


FIG 38—DENSITY OF POPULATION IN THE VALLEY OF THE RHONE AND SAONE

**Reaction of Man on Environment—**The effect of the environment on the inhabitants of the valley has now been traced. It remains to give a sketch of the reaction of the inhabitants on their environment. This is more considerable than is generally thought, for civilised man is continually engaged in levelling high lands and filling up valleys. Perhaps the most noticeable effects are those produced on vegetation. The upper valley and its slopes are natural forest land and in early times were covered with deciduous trees. These have been removed by man, except in those parts where their removal would be to his

loss, viz in the upper slopes of the Jura. The absence of these trees has caused, as elsewhere in Europe, a decrease in rainfall with a corresponding increase in dryness of

climate. In places where the slope of the ground allows it, when the binding influence of tree roots has been removed, the soil is washed away, leaving bare patches of rock. This is noticeable on the slopes of the Central Highlands. The ill effects of uncontrolled deforestation are so fully recognised that the French Government has regulated the felling of trees and has encouraged afforestation in suitable places.

In the south, where horticultural occupations are greatest, the physical aspect of hill-sides has been modified by the construction of terraces whose outer edges are bound together by dry walls and lines of olive trees. Cultivation has had its effects throughout the valley by cutting up the land into fields. These, however, are not separated by hedgerows as in England, but merely by shallow ditches. The effect of the constant loosening of the soil under the plough is to move it gradually down the slopes, and this tendency is only partially checked by the ditches which form a catchment for the wash.

More important is the canalisation of rivers and the drainage of swamps. In the north, much of the Saône, and parts of its tributaries where gradient permits, have been canalised. This causes the deepening and narrowing of the streams. In the narrows of the valley between Lyon and Valence, various engineering works have been undertaken to clear the channel of the main stream and make navigation easier. In all this may be included the care of rivers to prevent obstacles from choking the bed and causing the surrounding country to be flooded. The result of this is best seen in the reclamation of the Pays de Dombes. In the south, where the deposition of silt by the Rhone is so great, it has been found necessary to furnish navigation with an artificial river mouth, the Canal de St. Louis, which nevertheless has constantly to be dredged.

Although this work facilitates the general drainage, yet there are parts which are naturally marshy, and which when left to themselves develop into pestilential swamps. This is especially so in the deltaic region. The embankment of the mouths of the Rhone has not solved the problem, but in a way aggravated the ill-effects, since the stagnation of the marshes is all the greater

when the renewal of the water by fresh streams from the river is checked. Though much remains to be done, large areas of fertile alluvial soil have been reclaimed and are now under cultivation, where formerly existed shallow lagoons or malarial swamps. In other places, especially in the inland parts of Languedoc, where the rainfall is unequally distributed through the year, irrigation works have brought about the construction of canals and aqueducts.

Topography has been greatly affected by engineering and other works. In the mining districts of le Creuzot and Alais, slag heaps form small hills, in some cases rising to 200 feet. In other parts of the districts, the driving of mineshafts has caused the surface of the ground to sink into hollows, sometimes of considerable depth. Huge railway embankments and deep cuttings are often big enough to change the landscape and modify the topography, while the transport of quarried rock from one place to another is constantly tending to reduce the height of the one and raise the other. The waste of a great city like Marseille not only goes to reclaim the neighbouring swamps, but also raises the general level of the town itself.

Finally, many of these physical changes influence climate. The effect of deforestation in decreasing rainfall has been noticed above. The consequent decrease in humidity, together with the better drainage of the land, affects the temperature and raises it a few degrees. This effect is seen in the north, where it is an advantage, and in the south, where, until a controlled system of ~~irrigation~~ replaces the present caprices of the river mouths, its benefits will remain doubtful.

E D L

## CHAPTER IV

### ITALY

ITALY is the middle peninsula of three which extend southwards into the Mediterranean from the continent of Europe. As a region of Europe it differs widely from all other parts of the continent, and the special features of its geography in part account for its remarkable history and its very special place in the ancient and modern worlds.

**Structure.**—Geologically the Italian peninsula is a young country. Firstly, during the Tertiary period the folding of the Alps took place. The folding of the Apennines followed and was contemporaneous with that of the Atlas region of North Africa. The plain of Lombardy was formed partly by elevation, but chiefly by the waste brought down by streams from the Alps and the Apennines. Later on there was considerable fracturing and volcanic activity, particularly in the southern half of the peninsula.

**Relief.**—The Alps are a splendid chain of mountains running northwards from the Gulf of Genoa and then curving eastwards and finally south-eastwards to a point near the head of the Adriatic. The chain is narrowest and highest in the north-west (Mont Blanc, Matterhorn, and Monte Rosa), and towards the east it is of lower average height and breaks up into divergent ranges like the fingers of a hand. Almost everywhere these mountains rise abruptly from the northern plain. Only in the Trentino, to the north of Verona, is there a comparatively easy ascent from the Italian side to the crest of the Brenner Pass.

The Apennines are much less high than the Alps, but their importance in the geography and history of the country is very great. They mark off very clearly the northern plain, which, in climate, products, scenery, and history, contrasts in very

many ways with the rest of Italy. The Apennines are formed of a somewhat confused series of ranges, which runs the whole length of the peninsula, from the Gulf of Genoa to the Strait of Messina. They reach their highest point in Central Italy in



FIG. 35.—RELIEF AND COMMUNICATIONS OF ITALY.

the Gran Sasso d'Italia (9,560 feet). The greater part is limestone, but there are outstanding masses of hard crystalline and granitic rock, particularly in Tuscany and Calabria, and there are also the well-known volcanic regions. There are several districts in which the remains of formerly active volcanoes are

found, and of these the Alban Hills, to the south of Rome, and the Euganean Hills, near Padua, are the best known. Between Naples and Sicily there are several volcanoes still active, such as Vesuvius, near Naples, Etna, in Sicily, and Stromboli, in the Lipari Islands.

The most recent formations are the plains of alluvial soil brought down by the rivers. The great northern plain is almost entirely the creation of its rivers, which have filled up what was once a great gulf prolonging the Adriatic north-westwards between the Alps and the Apennines. The deltas of the Po, Adige, and Brenta are still pushing out into the Adriatic. The remarkable city of Ravenna, a naval station under Augustus, now stands, surrounded by marshes, six miles from the sea. A similar fate has overtaken the ancient cities of Adria and Aquileia even more completely. Even on the west coast, though the rivers are generally much smaller, the same process is going on, and this partly accounts for the decay of old seaports like Ostia and Pisa.

The Adriatic and Tyrrhenian Seas were formed by subsidence along lines of crust weakness, and evidence of continued instability is to be found in the frequent earthquakes which may occur in most parts of the peninsula.

Further evidence of the youth of the country is to be found in the character of the rivers. For the most part they are short and steep, flowing through wild ravines and over frequent falls. Even the larger rivers are seldom slow or deep enough for navigation. They are much more important as giving routes for communications, as obstacles in military campaigns, or as supplies for irrigation and electric power.

The Po is much the most important river. It rises in the extreme west on the slopes of Monte Viso, and flows eastwards to its great delta at the head of the Adriatic. It receives many tributaries laden with silt from the Alps. The Dora Riparia and the Dora Baltea lead respectively from the Mont Cenis and St. Bernard passes, while the Ticino, Adda, Oglio, and Mincio drain the Lakes Maggiore, Como, d'Iseo, and Garda. The main river is navigable for considerable distances, but only for small craft. In its lower course, it has raised its own channel to some

height above the surrounding country Owing to their greater volume and rapidity as compared with the Apennine tributaries, those from the Alps have pushed great fans of detritus out on to the plain, with the result that the main stream tends to follow a course nearer to the Apennines than to the Alps A characteristic of the towns of the northern plain is that they are usually situated away from the rivers, as the latter are very irregular both in volume and in their courses across the plain As might be expected, there is a considerable variety of soil in this region Near to the mountains the soil is loose and composed of the larger pebbles and boulders which were the first to be dropped by the streams when they reached the foot of the mountains In the centre is a much finer clay, composed of the lighter material which has been carried farther -

Between the Po and the Isonzo, several rivers enter the sea, pouring their silt into the lagoons at the head of the Adriatic The most important of these are the Adige, the Brenta, the Piave, and the Tagliamento Most of them are very irregular in their flow At times they are fine torrents, and at others the course of some of them is simply marked by dry beds of gravel As they frequently take new channels across the plain they are a great hindrance to communications

Between the Isonzo and the town of Fiume there is the peninsula of Istria with the peculiar dry limestone region of the Carso or Karst Here surface-water and vegetation are almost entirely absent Like the Causses of France, it is a region of disappearing and reappearing streams, of deep hollows where the roofs of underground channels have fallen in, of bare rock and gravel Its almost desert character contrasts vividly with the fertility of the plain to the west of the Isonzo, and it proved an insuperable obstacle to the advance of the Italian armies in 1915 and 1916

The rivers flowing into the Adriatic from the Apennines are all short and steep, but to the west coast flow some rivers of importance, such as the Arno, the Tiber, the Garigliano, and the Volturno

In some parts of the peninsula, there are interesting examples of crater lakes (e.g. Lakes Albano and Nemi, south of Rome, and



Lake Avernus, near Naples). The lakes in the north are certainly of glacial origin, dammed back by terminal moraines of old Alpine glaciers. This is very clearly seen to the south of Lake Garda. Some of these lakes are remarkably deep. Lake Maggiore is well over 2,000 feet deep, although its surface is only about 600 feet above sea-level.

**Coastline.**—The east and west coasts of the peninsula offer marked contrasts, which partly account for the fact that the peninsula has been dominated by the cities of the west throughout its history, until modern times. The lagoon coast of the Northern Adriatic presents a strange aspect, for it is often hard to say where the land ends and the sea begins. Only Venice has persisted in the struggle against the accumulating sand-banks, and it was important less as an Italian power than as a maritime power and an emporium for trade between the Eastern Mediterranean and Central Europe via the Brenner Pass. Southwards the east coast, with its lack of harbours, of coastal plain, or of easy access inland, is of little importance until the lowland of Apulia is reached.

The west coast, on the other hand, with its islands, its deep bays, its rivers leading inland, and its fertile lowlands, has always been far more important. Only the coasts of the Roman and Tuscan Maremma suffer from silt in the same way as the Adriatic coast.

**Climate.**—Along with other Mediterranean lands, Italy has a climate of a very special character, determined by several factors, of which the periodicity of the rainfall is perhaps the most important. It is in the transition zone between the westerly wind belt to the north and the north-east trade winds to the south. According to the time of year, one or other of these wind systems controls the climate. In summer, with the northward swing of the wind belts, the trade winds blow steadily. These are the Etesian winds of the Greeks. They bring little or no rain to the Mediterranean region. In winter, the wind belts move southward, and the westerlies, coming from the Atlantic and Western Mediterranean, bring plentiful rain to the Apennines and Western Alps. At this period low-pressure areas, caused by the warmth of the sea as compared

with the land, are frequent over the Adriatic and Tyrrhenian basins. As a result, the Tyrrhenian coasts usually experience warm moist winds from the south and south-west, while the winds on the Adriatic side are often from the north, drier and much colder.

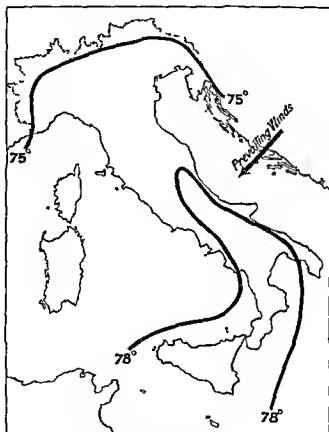


FIG. 40.—CLIMATE OF ITALY  
Summer conditions

Lying between latitudes  $46^{\circ}$  N and  $37^{\circ}$  N, the temperature of Italy is generally high as compared with the rest of Europe. Nearness to the sea tends to modify the range of temperature over most parts of the country, but great local variations occur on account of both altitude and aspect. In the higher parts of the Central Apennines, very severe winters are experienced. The greatest contrast is to be found in Calabria, where the semi-

tropical vegetation of the coastland flourishes within a few miles of peaks which may be covered with snow in October.

The climate therefore is, in general, one of mild, wet winters and hot, dry summers. There is also a much greater proportion of bright sunny days than in Northern Europe. The long

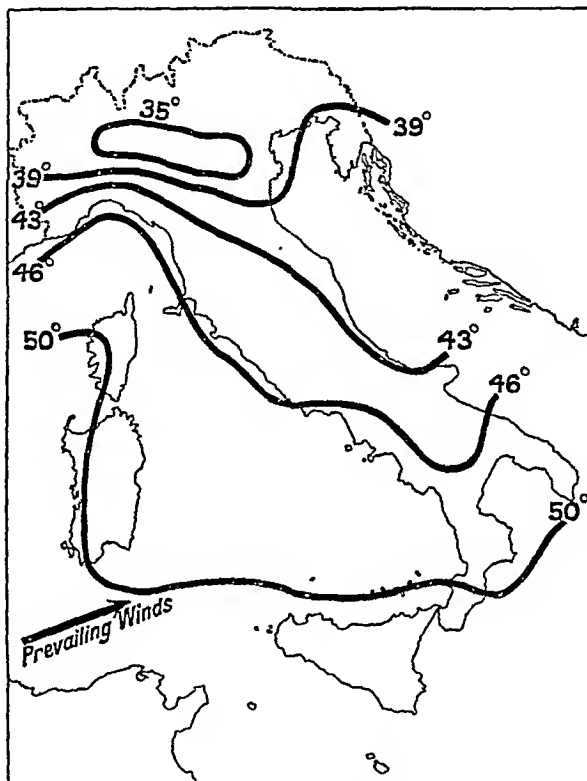


FIG. 41.—CLIMATE OF ITALY.  
Winter conditions.

summer drought has a very important effect upon plant life and therefore also upon human affairs.

One important region, however, does not have this typically Mediterranean climate. The northern plain, shut off by the Apennines from the influence of the westerlies, has a continental type of climate, with greater extremes of temperature, and the rainfall distributed throughout the year, but occurring chiefly

in summer. At Milan the winter is as cold as in Copenhagen, while in summer it is almost as hot as in Naples. North of the Apennines plants which are unable to stand severe frosts will not thrive except in *certain favoured spots*. A *common feature* of the winter weather in this part is the *inversion of temperature*, when the cold, damp air drains down from the hills, and settles as a thick, white fog over the plain.

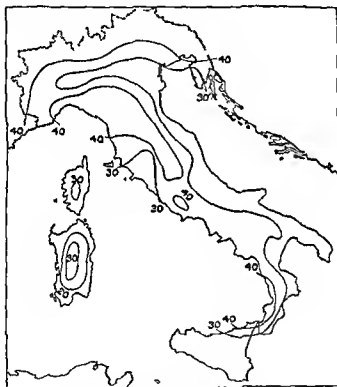


FIG. 42.—RAINFALL OF ITALY

In a country of such varied relief as Italy, there must be also considerable varieties of local climate. Well sheltered from the north, the southward-facing slopes of the northern lake district, of the Genoese coast, of the Arno Valley, and of the Bay of Naples are all specially favoured. On the other hand, the northward-facing slopes of the Apennines in Emilia have a much harsher climate than most parts of Italy.

Local winds also have considerable importance. The Adriatic

lands suffer periodically from the *Bora* (Boreas), a cold, north wind drawn southwards towards the low-pressure area of the Adriatic. (Cf. the *Mistral* in Provence.) A similar wind—the *Tramontano*—affects the valley of the Arno. On the other hand, another wind, the *Sirocco*, has an almost worse reputation. This is a hot, damp, enervating breeze which frequently blows from the south on all the southern coasts of Italy. It generally carries quantities of fine dust from the Sahara, which is deposited as a thin, reddish slime over everything. In 1926, it was even experienced as far north as the Ligurian coast, where it is known locally as “the red rain.”

**Vegetation.**—The special character of the climate has a great influence on the vegetation, and this in turn has an equally great effect on human activities.

The alternation of mild, wet winters and long, dry summers leads to the development of various devices of the plant world for the storage of moisture and the prevention of excessive transpiration. Large areas of grass land are rare, because grasses with their shallow roots require frequent moistening of the surface layers of soil. Desert occurs occasionally where the conditions of soil or climate make it impossible for even deep-rooted plants to find moisture. Such is the case on the Carso or on the highest uplands.

Before man interfered, the prevailing vegetation was woodland and thickets, in which the plants were of drought-resisting character. The leaves of the typical plants are generally small, long and even spiky, with thick, glossy skins. They are generally deep-rooted, and often have the habit of turning edgeways to the direct rays of the sun; e.g. the olive. The trees are generally compact in outline, and do not thrust out great branches of foliage in all directions. Notable among them are the tall, dark cypress, the evergreen oak, with its small leaves dark green above and grey and hairy underneath, the umbrella-shaped stone pine, and the olive. The last mentioned, with its twisted trunk and sparse foliage, is the most commonly cultivated tree in the Mediterranean lands. It is notably absent from that part of Italy which has not a Mediterranean climate—the plain of

**Lombardy** Throughout the length of the Apennines the better-watered slopes are covered with fine chestnut forests, which provide the people with a very important article of diet. On the highest slopes, the conifers of Northern Europe appear, e.g. larch and Scotch fir. Many trees provide against drought by bearing juicy fruits, e.g. orange, lemon, and vine. The orange and lemon are not, however, native to the Mediterranean.

Associated with this woodland is a great variety of plants which store moisture in bulbous roots. Such are the hyacinth and narcissus, the beautiful names of which recall the fine mythology of Greece. Many of the plants have strong scents, e.g. wild thyme and lavender. There are also many plants of the oleander and laurel type. In the south, the prickly pear is very common.

The march of the seasons is a constant pageantry of beauty and colour. In winter the land is green and fresh, a carpet of flowers and a burst of fruit blossom appear with the spring. Gradually the summer drought imposes a resting period, and the land becomes parched and dry. The rich brown of the earth mingles with the dark greens and greys of the evergreens, while a glaring sun is reflected from white walls and dusty roads. In autumn there is a splendid glow of colouring in the vineyards.

It cannot be doubted that the scenery of Italy has played an important part in the spiritual life of the people. The beauty of natural surroundings cannot fail to influence powerfully those who live continuously under its spell. In the north, the glorious circle of mountains is ever present as an inspiring background to the life of the plain. They are perhaps at their best at dawn, when peak after peak catches the light of the rising sun. Along the rocky coasts of the Riviera, the scenery is a constantly changing view of rugged headlands, blue sea, and little coves with palms and white-walled villas. In Central Italy, the scenery is more intimate and detailed in its beauty, with little picturesque ravines, high-perched mountain hamlets, groves of olives and vineyards lit up at night by the fireflies. Farther south, the scenery is grander and more fantastic. There is the wonderful sweep of the Bay of Naples, with Vesuvius in the background, and the

romantic island of Capri just outside the bay ; while in the extreme south, great bare hill-sides fall steeply to the vineyards and the bays of the coast. The view of Calabria from the sea reminds a traveller of the grim sierras of Spain.

The long settlement of the country, and the almost universal destruction of birds in the interests of fruit farming, has robbed the country of much of its animal life. In the Alps, the chamois is still found and is strictly preserved. In the more mountainous parts of the Apennines, wolves are still found, and in some districts were recently on the increase. Wild boars are hunted in Sardinia. In the Alps, the larger birds of prey are not uncommon. There are few game birds apart from the quail, which is caught in large numbers when migrating. The fisheries of Italy are of very considerable local importance. Tunny, anchovies, and sardines are the most important items in the list of food fishes. They are caught mainly in the Tyrrhenian Sea off the coasts of Liguria, Tuscany, and the Islands. Coral and sponge fishing is also carried on off the Sicilian coasts, the small island of Lampedusa being the centre of the sponge fisheries.

**Variety of Regional Conditions.** — From the above account of the physical geography of Italy, it is clear that within the well-marked boundaries there will be found many natural divisions with strongly marked characteristics of their own. The Apennines, above all, are a great dividing-line, in this, as in other features of the geography of the country, and the Romans were fully justified in giving the name of Cis-Alpine Gaul to the region lying between the Alps and the Apennines. Regions which stand out with marked individuality are : the Venetian lands, with their long and unique history ; the thickly populated northern plain ; the bold, picturesque coast of Liguria ; Tuscany, the home of the Renaissance ; the empty expanse of the Roman Campagna ; the Neapolitan bays with their languid beauty ; and the semi-desert of the southern peninsulas.

This rich variety is increased when the islands are included. Sicily is a region of exceptional interest. Its three coasts bear traces of occupation by peoples from all parts of the Mediter-

ranean, while the rocky fragment of Sardinia stands apart in wild, untamed grandeur

The strong individuality of these regions is emphasised by the way in which the provinces of modern Italy frequently correspond very closely to those of the Roman Empire

**Agriculture** — Until quite recently Italy has been predominantly an agricultural country, and even now, in spite of the great industrial development of the north, over 50 per cent of the population is engaged in agriculture. To a traveller from other lands, the most striking features of agriculture in most parts of Italy are generally the absence of large, open fields devoted to one crop, the comparative unimportance of pastoral activities in most districts, and the detailed cultivation of every part of the farm

Once again the northern plain stands out in contrast with the rest of the country. Here alone, along the banks of the rivers, is there sufficiently rich pasturage for a flourishing dairying industry, known to the world for its Parmesan and Gorgonzola cheeses. Here also the olive is conspicuously absent, its place is taken by the mulberry and silk-worm culture. Hot summers and a plentiful water supply make possible the cultivation of rice in the lowlands of the Adriatic coast, and in some parts of the plain of Lombardy. Flax, hemp, and maize are also important

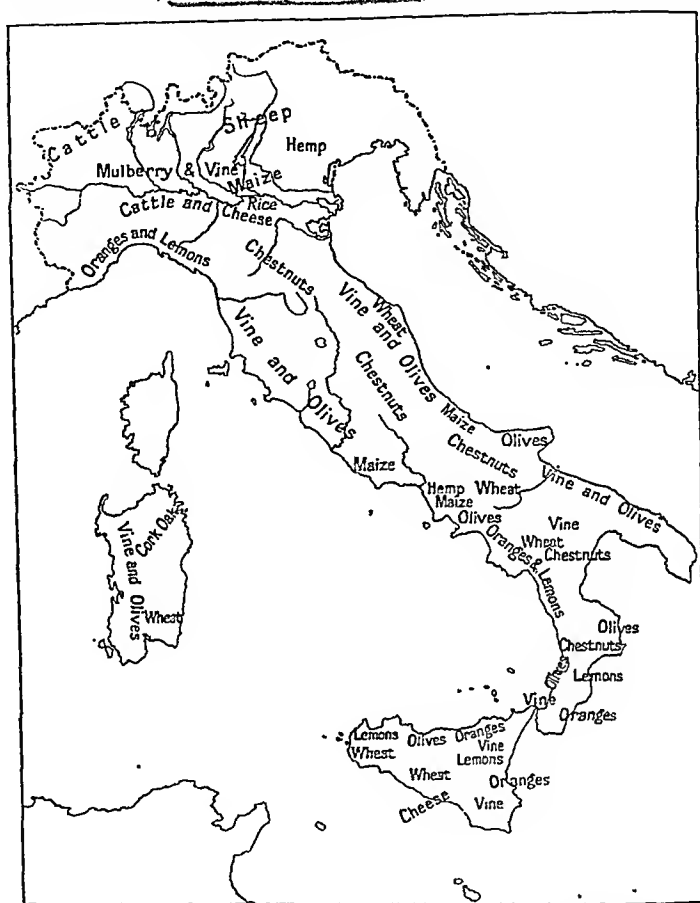
In the peninsula, on the other hand, the first importance attaches to the olive and the vine. The former is particularly important, because in a land where animal fats are not common oil forms an important article of diet. The vine supplies the universal drink of the people. It requires a great deal of skilled labour. Although the Italian wines have not the high reputation of the French wines, good qualities are produced in Piedmont (Asti), Tuscany (Chianti), and Sicily (Marsala)

The citrous fruits (orange, lemon, etc.) were introduced at a comparatively late date, but they now form the chief agricultural wealth of some parts of the south. Forest trees, such as the chestnut (for food) and the walnut and cypress (for timber), are more carefully preserved now than formerly. Reckless deforesta-



tion in the past has left an evil legacy in the bare hill-sides and in the malarial<sup>1</sup> marshes of the coastal plains.

Of the cereals, wheat is the most important, but it is generally



CRIBB & CO. HOLBORN

FIG. 43.—VEGETABLE AND ANIMAL PRODUCTS OF ITALY.

regarded as secondary to the fruit culture, and Italy only produces two-thirds of the wheat which she consumes. The yield of grain per acre is small, and the broken relief of the

<sup>1</sup> Malaria is said to be a word of Italian derivation—*mala aria*. It has certainly been one of the great scourges of Italy, and Italian medical science has played a prominent part in the study of the disease.

land and the <sup>2</sup>system of terrace farming are against large methods of ploughing and harvesting. In 1910 the yield of bushels per acre was only 12 in Italy, as compared with 30 in Britain, 20 in Manitoba, and 8 in Russia. The position has, however, been considerably improved lately, in 1922 the yield was 14 1 bushels per acre. Straw-plaiting and the making of straw hats is an important adjunct to the wheat farming industry.

The poor pasture of the uplands is given over to sheep and goats in the summer, and in the winter the animals are brought down to the Maremme, the lowlands along the coasts. The shepherd is almost as much an abomination to the Italian farmer as to the Egyptians in the days of Joseph. The damage done to the young trees by the nibbling sheep and goats is a constant source of irritation.

Farming plays so large a part in the national life that a detailed account is necessary if the conditions are to be properly understood. An Italian farm generally consists of a central group of buildings, with a wine press, a mill for crushing the olives, a threshing floor, stables for a pony and one or two oxen, and cellars for storing wine and oil. Immediately beside these is the fruit and vegetable garden, with beans, artichokes, peaches, plums, and pears as the commonest plants. Above and below are the terraced slopes of the vineyards, with little channels of water for irrigation. Along the terraces are rows of olive trees, with the vine trailing in long festoons from tree to tree, or trained up the walls of the terracing. On the level strips are grown various crops—cereals, hay, green fodder, etc. Finally, there is the *bosco*, on the least sunny slope, where some cypresses and small oaks are grown, and among the junipers and broom the goats and oxen find rough pasture. Every patch of ground is carefully utilised.

The following diary of the year's work was compiled by a farmer on the slopes of the Apennines to the north of Florence.

January	Olive gathering—storing and crushing for oil.
February	Vine pruning. Ploughing for spring sowing.
March	Pruning of olives and vines. Sowing of barley.
April	Staking and tying of vines. Sowing of potatoes and maize.
May	Spraying of olives and vines. Hay cutting.

June . . .	Spraying, tying, and pruning continued. Reaping of wheat.
July . . .	Spraying continued. Threshing. Sowing of winter green fodder.
August . . .	Spraying continued. Ploughing and hoeing. Sowing of barley and beans for winter.
September . . .	Preparation of thorn hedges to protect grapes from thieves. Gathering of grapes.
October . . .	Wine-making. Sowing of oats and hay.
November . . .	Sowing of wheat. Hoeing vine lines. Furrows for rain-water.
December . . .	Beginning of olive gathering.

It will be observed that there is a succession of crops to be obtained from the same piece of ground at different times of year.

The following lines are from one of the Latin poets,<sup>1</sup> and might have been written of an Italian farmer to-day :

Happy, who far from turmoil, like the men  
That lived in days gone by,  
With his own oxen ploughs his native glen,  
Nor dreams of usury !  
His maiden vines it is his gentle craft  
With poplars tall to wed ;  
Or the rank outgrowth lopping off, ingraft  
Fair branches in its stead ;  
To watch his kine that wander, lowing far  
Into the valley deep :  
Store the prest honey in the taintless jar,  
Or shear his tender sheep.  
And soon as Autumn with fair fruitage tricked,  
Peeps o'er the fallows bare,  
Then with what joy his purpling grapes are picked  
And newly grafted pear.

The methods of landholding vary greatly according to districts. In the north, peasant ownership is not uncommon, while in the south vast estates are held by absentee landlords and tilled by tenant farmers under a bewildering variety of leaseholds. The commonest form of tenure, however, is the *Mezzeria* of Tuscany. By this system, the landowner provides land, buildings, implements, livestock, and half of the seeds and manures. He is responsible for the general upkeep of the farm and pays almost all rates and taxes. The farmer and his family supply their labour, skill, and experience. The produce of the farm is equally divided between farmer and landlord. It is a system of tenure which works very well, especially if the landlord lives in the

<sup>1</sup> Horace: *Epodes*, II, 1-20.

district, as is usually the case. The same system is found in the south of France, in Greece, and in Portugal<sup>1</sup>

A number of these farms usually form a distinct little territorial group, focussed on some small hamlet with its inn, its church, and small piazza or market square. These in turn have their social and economic centre in the market town, which is a very important feature in the national life of Italy. These market towns are the centres of agricultural life as contrasted with the large industrial towns. Good examples of these towns are Udine, in the Venetian plain, or Pistoia, near Florence. By their marked individuality, they make an important contribution to the rich variety of Italian life.

**Mineral Wealth** — Italy cannot be said to be rich in minerals. There is only a very small coalfield in the Val d'Aosta in the north east. Lignite, however, is worked in some districts in the north and centre. The most important mineral ores are of iron, especially in the island of Elba. Lead and zinc are important sources of wealth in the south west corner of Sardinia. As might be expected, sulphur is obtained in great quantities in the volcanic regions, particularly in Sicily, and it is of great importance to the vine growers for spraying upon the vines. Salt is obtained from mines in Calabria, from brine springs in Tuscany, and by evaporation on the coasts. The marble quarries of Carrara in Tuscany have been worked since Roman times, and they provided the raw material from which Michael Angelo hewed his splendid massive statuary.

**Industries** — The development of modern industries in Italy was retarded by the fact that, when other European countries were fully launched on the developments following on the industrial revolution in England, Italy was split up into a number of unprogressive and badly governed little states. The energies of the nation throughout the nineteenth century were absorbed in the struggle for independence and national unity. In addition to this, the lack of mineral wealth, especially of coal, severely handicapped the establishment of great modern industries.

<sup>1</sup> In the foregoing account it must be remembered that this applies only to one though an important region of Italy.

With the recent developments in the use of hydro-electric power, however, a very great change has taken place, and Italy has now several great industrial cities, whose prosperity is based on the water power of the Alps, and whose cleanness and modern organisation contrast favourably with the conditions in older industrial regions. The electrification of the railways is being rapidly carried out, and great water-power schemes are going forward in other parts of the country besides the north. The consumption of hydro-electric power has almost been doubled between 1919 and 1926, and is capable of considerable extension.

The textile industries of silk, wool, and cotton are at present the most important industries of the north. Italy does not supply enough of the raw materials to meet the requirements of these industries. Most of the raw cotton and wool are imported, as well as a great deal of raw silk. Como, Milan, and Bergamo are the chief silk manufacturing towns.

Great developments are also taking place in the metallurgical industries. The making of automobiles is the chief trade of Turin, where there is the famous Fiat firm (Fabbrica Italiana Automobili Torino). The manufacture of tyres in Milan is an important allied industry. Heavy engineering and ship-building are carried out on the Genoese coast. In 1925, Italy took second place in the world's shipbuilding output. In 1926, the world's largest motor liner, the *Augustus* (31,000 tons), was launched at Sestri Ponente, near Genoa.

**Communications.** — The relief of the country is a serious obstacle to communications, for the long chain of the Apennines forms a very real barrier not only between the northern plain and the peninsula, but also between the east and west coasts. A glance at the map will show the main lines of railways and the importance of the junctions at Milan and Bologna particularly. The trend of the peninsula towards the south-east, and the position of Venice and Genoa in relation to the Alpine passes, have made Italy a great trading nation between the East and North-western Europe. In spite of the long coastline, however, there are not many good ports. Trieste, Fiume, and Pola are good harbours, but of little use to Italian trade. Between Venice

and Taranto only Brindisi, which has mail and passenger traffic with Egypt and Port Said, has more than local importance. Taranto, with a splendid inner harbour, is an excellent naval base. Naples, with its sheltered bay and rich hinterland, is the largest city in Italy. The opening of the Alpine passes and the industrial development of the northern plain have made Genoa a great port, but, crowded between the hills and the sea, trade is liable to delays through the congestion of shipping in the harbour.

**Cities and Provinces**—After the fall of the Roman Empire, Italy was left with a very strongly developed municipal organisation, but with no sense of nationality. The disunion, which was a feature of Italian history throughout the succeeding centuries, was due partly to the geographical configuration of the peninsula, but more to the rivalry of non-Italian powers—popes and emperors, French, and Germans, Normans, Saracens, and Spaniards. The result was the development of cities and provinces of marked individuality with little to bind them together.

**Cities and Provinces of the North**—The northern plain is a region of great fertility. The alluvial soil is easily irrigated by canals from the many rivers, and the prevailing scene is one of endless rows of fruit trees, with the vine trailing in festoons from tree to tree, and the intervening ground sown with various cereal crops. The smaller towns are engaged in various industries connected with agriculture, such as cheese-making, or the manufacture of agricultural machinery. The whole region is closely cultivated.

Turin, a fine modern town with broad streets and boulevards, is situated at a point where routes across the Western Alps converge. Railways from France reach it through the Col di Tenda (from the Riviera) and the Mont Cenis tunnel. Road passes, less important now than formerly, are the Argentière, the Little and Great St Bernard, and the Genève passes. Turin is the capital of the Province of Piedmont, and was the capital of the Dukes of Savoy, who later, as Kings of Sardinia, became the royal house of modern Italy. Only in 1860 were Savoy and Nice, on the western side of the Alps, ceded to France,

and French was until recently the language of the upper classes. The position of this little state, commanding so many passes,

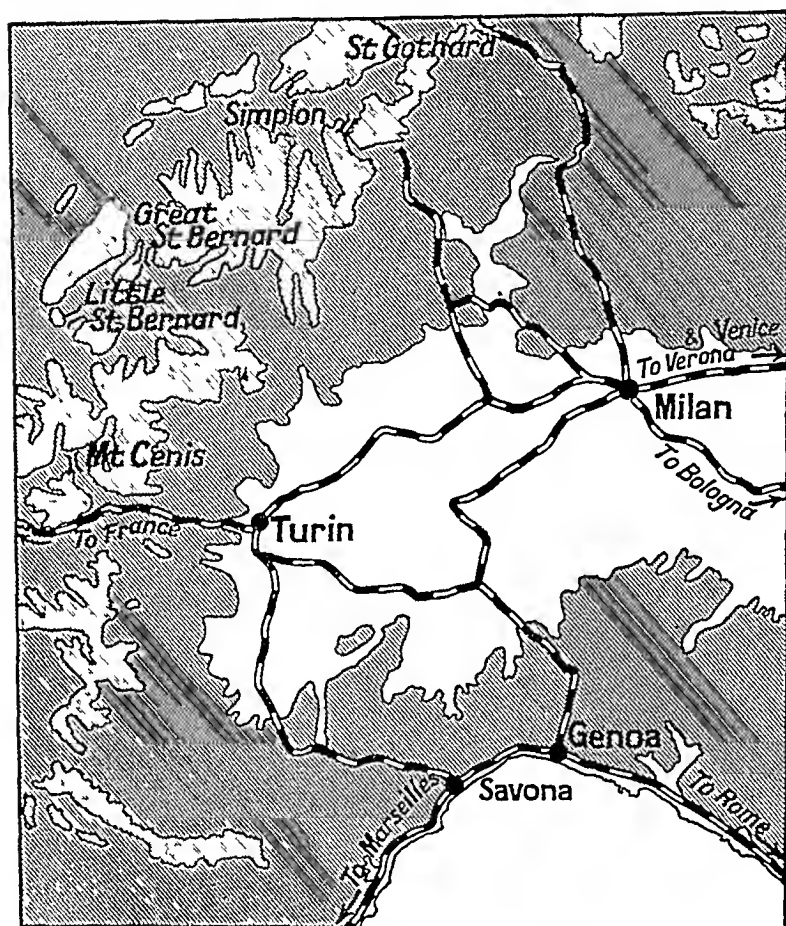


FIG. 44.—GEOGRAPHICAL FACTORS INFLUENCING THE GROWTH OF GENOA, MILAN, AND TURIN.

Note: Milan and Turin are centres of the productive Plain of Lombardy and lie at the foot of passes through the Alps. Genoa is the seaport for the hinterland, including Milan and Turin, and lies opposite a pass in the Apennines.

made it possible for its rulers to play a part in history out of all proportion to the size of their territory.

Greater than Turin is Milan, where the two great railway-

routes, through the Simplon and St Gothard tunnels, meet on the plain. Besides sharing with Turin in the engineering industry, it is the chief town in Italy for silk and cotton manufactures, and is now the commercial capital of the country. Throughout the Middle Ages it was a powerful trading city, with a strong democratic and municipal spirit. The splendid cathedral, with its Gothic architecture, shows its connection with Northern Europe.

To the east of Milan lies a region of very great strategic importance. The route from Austria by the Brenner Pass opens on to the plain, either by the shores of Lake Garda or by the parallel valley of the Adige. So long as Austria held this entry she was in a position to cut off Venice from the rest of Italy and to strike across the plain in any direction. To strengthen herself further, Austria built the famous "quadrilateral" of fortresses at Peschiera, Mantua, Legnago, and Verona. The strength of this position was one of the greatest obstacles ever encountered by Napoleon. Like the Low Countries, the Lombard plain has been one of the great battle-grounds between the Latin and Germanic peoples, and the rivers have been repeatedly important factors in the military history of Europe. Among the most important in this connection are the Ticino, the Mincio, the Piave, and the Isonzo.

The unique situation of Venice has placed it in a very special position in history. It was a place of refuge from the invading barbarians after the fall of the Roman Empire. Inaccessible from the land by reason of the lagoons, and sheltered from the sea by the storm beach of the Lido, Venice was yet able to take an all-important part in the trade in the Middle Ages by the proximity of the Brenner Pass and by her position at the head of the Adriatic. Beginning as a collection of miserable fishermen's huts on the mudbanks, Venice grew in wealth and splendour to be mistress of the Adriatic, the home of a great maritime Empire, and one of the most beautiful cities in Europe. Just as the Gothic architecture of Milan shows the connection of that city with the north, so the ornate beauty of St Mark's speaks of the influence of the east. Alike in her situation, her



history, her commerce, and her art, Venice offers many points of comparison with Holland.

On the south of the plain lies Bologna, one of the chief route centres of Italy. The Roman Via Emilia has its successor in the long railway from Milan along the northern side of the Apennines and down the east coast. At Bologna a pass leads over the Apennines to Florence and Central Italy, while routes cross the plain from Verona and Venice. Here, where the roads to Rome converged from all Europe, arose one of the first great international universities of Europe, famous for its schools of Law and Medicine. Similar conditions gave rise to the University town of Padua, to the north of the Po, near Venice.

The strip of coast known as Liguria is geographically part of the peninsula, but the passes from Genoa across the Apennines link the region definitely with the north. With its palaces and villas crowning the amphitheatre of hills above the busy harbour, Genoa "the proud" is a fine sight from the sea. In the Middle Ages it played a part similar to that of Venice, but it fell more easily a prey to powerful neighbours. It was not until the opening of the St. Gothard tunnel that the port acquired its present great importance. In addition to the shipping trade, it is the chief centre for shipbuilding and heavy engineering in Italy. Spezia nearby is the chief naval dockyard of Italy.

The Ligurian coast is very picturesque. Pretty seaside resorts and fishing villages cluster in sheltered coves between bold rocky headlands. The road and the railway wind along precariously between the hills and the sea. The mildness of the climate makes it possible to cultivate the orange here, although farther south it is quite impossible.

**Cities and Provinces of the Peninsula.**—If the cathedrals of Milan and Venice show the association of those cities with other lands, the beautiful Italian Renaissance style of Florence shows that city to be the most purely Italian of all the cities of Italy, as Tuscany is the most typically Italian province. The Arno flows in a wide vale from the Apennines westward to the sea, and in its sheltered valley the rich agriculture of Italy is to be

seen at its best. At a point where routes converge from Bologna, Pisa, and Rome, and at a good crossing-place over the Arno, Florence became a great trading and banking city of the Middle Ages. As in the case of Venice, wealth and leisure brought out a wonderful expression of artistic and literary feeling when Florence was the home of the Renaissance. The importance of the city in early trade is shown by the word "florin" in English and Dutch currency.

The influence of geographical position upon the history of

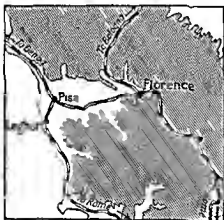


FIG. 45.—GEOGRAPHICAL FACTORS INFLUENCING THE GROWTH OF FLORENCE

Florence is the centre of a small productive area and stands on the route from the Plain of Lombardy to Rome.

Rome has sometimes been exaggerated. The city rose to importance as an outpost of the Latins against the Etruscan power to the north of the Tiber, in a position which was the strategic centre of the peninsula. On the right bank stood the Janiculan hill, below which an island in the river provided a good crossing-place, commanded by a group of small steep-sided hills on the left bank. The strategic importance of the position is known to everyone who remembers Macaulay's ac-

count of the exploit of Horatius, and that struggle was curiously repeated by Garibaldi in 1848, when the critical point of attack was the Janiculan hill. To these local considerations must be added the fact that, below this point, the Tiber was navigable for small boats, while above it the valley gave a route northwards into Central Italy. The present importance of the city, however, is due to historical and religious, rather than to geographical, causes. The Roman Campagna, or the plain of Latium, was in early times occupied by many little satellite towns, but the ravages of war and the scourge of malaria have made it to day one of the most thinly populated parts of Italy,

given over to herds of cattle, sheep, and goats. It contrasts strangely with the thickly populated lowlands of Tuscany and Campania to the north and south. Civit  Vecchia, as a port of Rome, is the successor of ancient Ostia.

The beautiful plain of Campania, rich in volcanic soil, sheltered by the mountains and watered by the Volturno, has always been densely populated, in spite of the recurrent outbreaks of

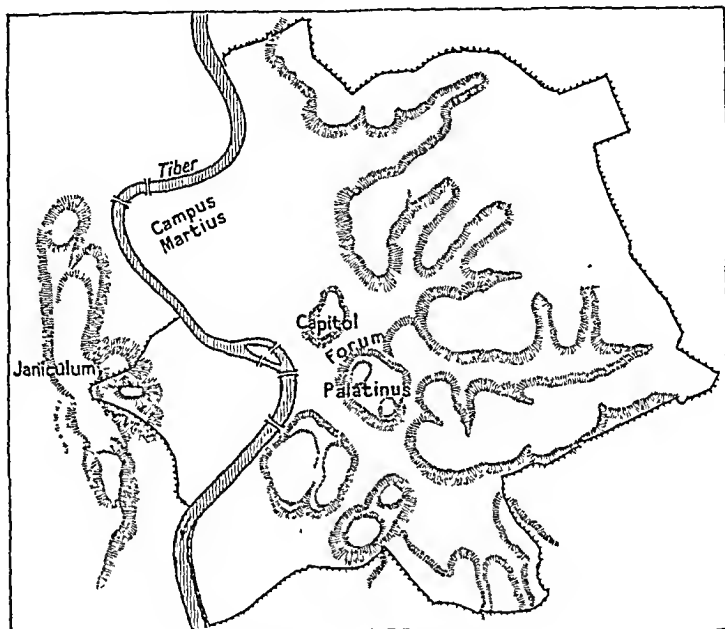


FIG. 46.—THE SITE OF ROME.

Vesuvius and the not infrequent earthquakes. Naples, the largest city of Italy, disputes with Genoa the claim to be regarded as the chief port of the country, but whereas the hinterland of Genoa is distant, the prosperity of Naples is based on the fertility of the immediate neighbourhood. Nearby are the sites of ancient cities such as Herculaneum and Pompeii. Capua, the ancient rival of Rome, is still an important railway junction on the Volturno. To the south of the Bay of Naples is the Gulf of Salerno, with Amalfi, an ancient sea-trading rival of Genoa, and

Salerno, with its Norman castle At Salerno was founded one of the earliest medical schools in Europe

Calabria is a wild, mountainous region, perhaps the least progressive part of Italy One of the highest districts is well named Aspromonte These parts of Italy have suffered greatly through misgovernment in the past, and were until quite recently a home of brigandage and secret societies The peasants do not usually live in isolated farms, but in large villages, and often tramp daily considerable distances to their work in the fields Vast estates are held by absentee landlords The forests have generally been cut down recklessly, and many parts of the lowlands are uninhabitable on account of malaria The chief town on the south coast is Taranto, an ancient Greek colony, now an important port and naval base The southern peninsulas have always been closely connected with the east and south, and even to-day there exist, in the uplands of Apulia, small communities of Albanians living a life more akin to that of the Balkans than of Italy

Sicily is a continuation of the Apennines, with the great volcano of Etna rising above the cleft of the Strait of Messina The whole island is thickly populated, but the wheat lands of Catania under Mount Etna, and the orange groves of Palermo stand out as regions of exceptional fertility The interior is a high, undulating plateau where the chief crops are beans and cereals

Standing at the cross roads of the Mediterranean, Sicily has shared in almost every phase of Mediterranean civilisation This is seen in the place names of Gibilrossa, Piana dei Greci, and the Toledo, Palermo's principal street. There are many beautiful examples of Greek architecture, as in the temples of Segesta and Girgenti, and the amphitheatre of Syracuse Norman and Arabic influences are to be seen in the cathedral at Palermo Generally speaking, Syracuse and the eastern half of the island were the scene of Greek colonisation, while the western parts were dominated in turn by Carthaginians, Saracens, Normans, and Spaniards

There is a marked spirit of independence among the islanders.

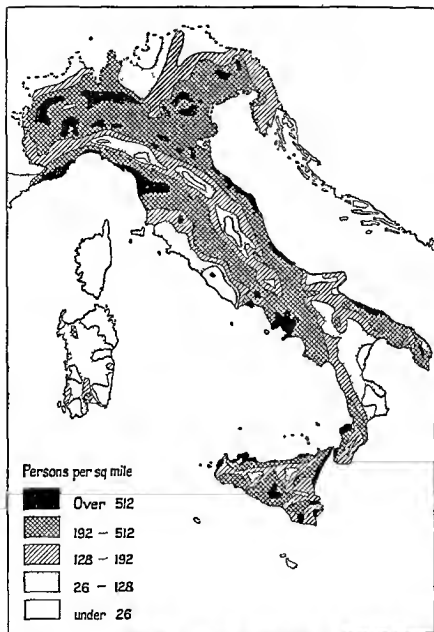
It was here that Garibaldi made his greatest stroke for Italian freedom. It is perhaps not fanciful to compare the rôles of Sicily and Crete in the stories of the Italian and Greek wars of liberation.

In striking contrast to the fertility of Sicily, is the rugged granite mass of Sardinia. The infertility of its mountainous interior and the malaria of the lowlands partly account for the backward state of its development. There is, however, considerable mineral wealth (lead and zinc) in the south-western part of the island.

**People.**—If a just appreciation is to be made of the contributions of Italy to civilisation, certain broad facts have to be kept in mind. In the first place, the peninsula is so situated that it has drawn to it immigrants from two directions. On the south and east it has been open to the influence of all the great civilisations of the eastern Mediterranean lands. It is to be noted, however, that actual settlement by the Greeks was confined to the harbours and bays of the south-western coasts. At the same time the northern plain has always been open to great invasions from the north and north-east. But the passage of the Alps and Apennines has always been sufficiently difficult to prevent these barbarian inroads from submerging the native civilisation, so that the new-comers have gradually been assimilated into the general life of the peninsula.

Two races of mankind are represented in the people of Italy. These are called by anthropologists Alpine Man and Mediterranean Man. In the south of the peninsula and in the islands the latter stock predominates. Its physical characteristics are slight, wiry bodies, long heads, dark eyes and skin, and black hair. This stock may have peopled Italy from Africa by way of the islands of Lampedusa, Malta, and Sicily. It is a branch of one great human stock which can be traced right through Southern Eurasia from the Mediterranean lands as far as the East Indies.

In Central Italy, there is a steady transition from a population with Mediterranean features to one with Alpine characteristics, until in the northern plain Alpine man predominates. Alpine



CHISS &amp; CO. NOLBORN

FIG. 47—DENSITY OF POPULATION.

Note the concentration of people in the **Plains of Lombardy** and on the coast strips; the contrast between the sparseness in **Sardinia** (block formation) and the comparative density in **Sicily** (fold formation).

man has a larger body than Mediterranean man. His head is rounder and his hair is fairer. These characteristics are interestingly apparent in the work of the artists of Venice, especially that of Titian, Giorgione, and Bellini.

The non-Italian population is very small, but minorities of non-Italians on the northern frontiers present serious political problems. The Albanians in their small villages in the extreme south are unimportant, but there are considerable numbers of French in the north-western valleys, and of Germans and Jugo-Slavs on the north-eastern frontier.

The population of Italy is very unevenly distributed. The most densely populated regions are the northern plain, Tuscany, Campania, and Sicily. Sardinia, the Roman Campagna, and Calabria are very thinly peopled. The largest cities are: Naples (698,000), Milan (663,000), Rome (591,000), Turin (452,000), Palermo (346,000), Genoa (300,000).

The religion of 97 per cent. of the Italian people is Roman Catholicism. The only other religious bodies of any importance are the Jews, the Albanians of the south, who adhere to the Greek Church, and the Waldensian Protestants in some of the Alpine valleys.

The popular idea of the indolence of Italians, exemplified in the phrase *dolce far niente*, is altogether erroneous. The modern Italians are, as a rule, a very frugal, hard-working people. The standard of education is not high as compared with some of the Western nations, but it has been raised very considerably of late, and in their work Italians show much native ability and artistic sense. The great industrial developments of the northern nations in the nineteenth century has tended to give them a sense of superiority, which is not altogether justified when it is remembered that much of this development is based upon the existence of great coalfields in those countries. In the age of electricity, the country of Marconi is destined to play a great part.

**Emigration.**—There is a very considerable seasonal movement of the agricultural population within the borders of Italy, which is largely connected with the movement of flocks from the hill

country to the plains in winter. There is also a seasonal migration into the lands of neighbouring states. In spite of his comparative poverty, the Italian is very deeply attached to his native land. Every year many thousands seek employment, for short periods only, in the countries of Western Europe. This emigration takes place chiefly from the northern provinces. Emigration for longer periods is characteristic of the south, and is mainly to new lands such as Latin-America, North Africa, and the United States. But even in this case the emigrants often return in later years to Italy. Few Italians leave Italy with the intention of making a permanent home abroad, and this in part accounts for the small success of Italian attempts at colonisation.

The causes of emigration are the insufficiency of opportunity in the homeland, a high birthrate and the consequent overpopulation.

**History**—Italy has been more than a mere transition zone between the east and the west or the north and the south. The physical and climatic conditions have in themselves exercised a great civilising influence. Nature has demanded of man patience, foresight, skill, and discipline. When such service has been rendered, the reward has been generous, and the steady accumulations of civilised life have been possible. When they have been neglected, the regions have relapsed into stagnation, as is particularly the case in the south.

In three great movements at least, Italy has profoundly influenced the history of Western Europe. The first was in the expansion of Rome, when the legions carried the language, the laws, and the civic ideals of Italy to every land west of the Rhine. For four centuries that part of the world enjoyed the Pax Romana.

The second great work was the spread of Roman Christianity, and the preservation of the idea of Christendom throughout the chaos of the Middle Ages. The spirit of Christianity was never more finely interpreted than in the life lived by St. Francis in the little hill towns of Central Italy.

Finally, it was in Italy that the Renaissance had its beginning. Then, stimulated as always by contact with the East, the native genius realised its greatest achievements. In Art, the Florentine



painters broke with the gilded formality of ecclesiastical painting, and Botticelli linked the Christian spirit with the pagan beauty of Greek mythology. Rich, proud Venice found new splendour in the colours of Bellini and Titian. It was the time of Dante, Boccaccio, and Petrarch in Literature, of Michael Angelo in Sculpture, of Palestrina in Music, of Galileo in Science, and of Leonardo da Vinci, the universal genius. "Greece crossed the Alps," and Columbus of Genoa opened the way to a New World.

**Modern Italy : the Risorgimento.**—At the Congress of Vienna after the Napoleonic wars, Metternich, the great Austrian Minister, contemptuously referred to Italy as a geographical expression. Exactly one hundred years later, a united Italy took the field against Austria, to prove that the geographical expression had a significance which Metternich had failed to discern.

In 1815, Italy was a collection of small kingdoms, duchies, and republics, many of which were under the control of Austria. This was partly due to geographical causes, which divided the country into separate regions, like the Tiber Basin, the South (Naples), etc., and partly to the racial need for strong autocratic government. The unification of the country was the work of three remarkable men, of widely differing characters and ideals, but each having the great aim of liberating his country as his guiding principle in life.

It was chiefly Mazzini who roused the people to enthusiasm for national independence and unity by his remarkable personal qualities and his fervent idealism. As a man of action he failed signally, largely because he wished to make Italy a republic, and tried to dispense with the services of the King of Sardinia and the Emperor of the French. The nucleus from which the kingdom of Italy grew was the little kingdom of Sardinia, which included Savoy, Nice, and Piedmont as well as the island from which the kingdom took its name. Cavour was the Prime Minister of this state during the critical years. In order to gain the support of Napoleon III, he had to cede to France the districts of Savoy and Nice, although Nice was the birthplace of Garibaldi, the most popular man in Italy. The desire of Italians to recover

this piece of their natural territory is one of the most disturbing problems in Europe of to-day

The first successful step in the process of unification came in 1859, after the failure of many revolts inspired by Mazzini. In that year, France, in return for the promise of Savoy and Nice, allied with Sardinia and helped her to conquer from Austria the rich province of Lombardy with the city of Milan. In the advance of the main armies eastwards, Garibaldi conducted a brilliant guerilla warfare in the northern lake region. This success was followed by the revolt of Parma, Modena, Romagna, and Tuscany from their own rulers, and their voluntary union with the kingdom of Sardinia. Further unification in the north was blocked at this stage by the strength of the Austrian position in the "quadrilateral" of fortresses to the south of Lake Garda, and by diplomatic threats from Prussia. In Central Italy also the papal dominions stretched across the peninsula and imposed a barrier to advance in this direction.

The patriots next turned their attention to the south, where in Sicily and Naples the population was suffering under the decrepit and corrupt rule of the Spanish Bourbons. The unrest in Sicily gave the opportunity for Garibaldi to carry out his most famous exploit, when with a thousand badly armed volunteers he conquered the island from 20,000 regular Neapolitan troops. His victorious march did not halt till he had liberated the whole of the south by defeating the Neapolitans in their attempt to hold the line of the Volturno at Capua. At the same time, the King of Sardinia led his regulars through the papal dominions and annexed all but the district round Rome.

The halt before Rome was imposed by diplomatic considerations. The annexation of the territories of the Church antagonised Roman Catholics in foreign countries, especially in France, and a French garrison remained in Rome to support the Pope's temporal authority. It was not till 1871, when France was involved in her struggle against Prussia, that this garrison was removed, and Rome became the capital of united Italy. Even to day the Vatican and St Peter's are papal territory, and the presence of the Pope in Rome constitutes a very difficult

problem in Italian politics. Venice and the Venetian plain were liberated from Austria in 1865-6, during the Austro-Prussian war, but the Trentino and Istria with Trieste and Fiume were not united to Italy until the peace of 1919.

Thus the patient diplomacy of Cavour, the noble patriotism of Mazzini, and the cool audacity of Garibaldi liberated and united the people of the peninsula in defiance of the wishes of most of the European Powers. In Italian history, this remarkable achievement goes by the name of the "Risorgimento" (Revival or Resurrection). The memories of its great events are still fresh in the minds of modern Italians. It was only part of the great movement of National Liberalism, which was one of the chief features of European history in the nineteenth century. The whole movement had a profound effect on English society, and its influence is to be seen constantly in the writings of Shelley, Browning, Meredith, Swinburne, and, above all, Byron. The renewed interest in Italy was also seen in the work of the writers and artists of the Pre-Raphaelite school.

**Frontiers.**—The frontiers of Italy offer many points of interest. The land frontier now runs roughly along the watershed of the Alps, with the notable exception of the Swiss canton of Ticino, which touches the Italian lakes. The new frontier of 1919 added the Trentino up to the Brenner Pass, and the Istrian peninsula to Fiume. This has meant the inclusion of a considerable non-Italian population, and the political separation of Trieste and Fiume from their economic hinterlands. Strategic considerations have overridden economic, and to a certain extent national, considerations. There remains also a large German-speaking population in the northern Trentino, which bitterly resents its separation from Austria. Italy, however, was determined that she must never again be placed in the inferior strategic positions of 1915, either on land or at sea.

The frontier of the Alps is deceptive as a strategic barrier. The mountains have been called the splendid traitors of Italy. The approaches from the north are by easy slopes to the crests of the passes, where suddenly there is a very steep fall to the plain. The passes have often been forced from the west, north,



Italian foreign policy has always been very sensitive to the frequent political disturbances in the Balkan Peninsula, especially if they affect the Albanian coastline. From Albania it is easy to threaten naval attack on the south-eastern coasts of Italy.

**Exploration and Expansion.**—Before the establishment of the present kingdom, Italians had taken a full share in the exploration of the world, as the journeys of Marco Polo, and the voyages of Columbus, the Cabots, and Amerigo Vespucci testify. Genoa and Venice in the days of their greatness held trading-posts throughout the Eastern Mediterranean and even in the Black Sea. But the efforts of the modern kingdom in the direction of colonial expansion have not been very encouraging up to the present. Italy was a late-comer in the scramble for Africa and she has no colonies in any other continent.

In 1882 a small strip of coast was purchased for commercial purposes on the Red Sea coast of Africa. When this was followed by the dispatch of troops and an advance inland into the highlands of Abyssinia, hostilities broke out between Italy and the kingdom of Abyssinia, over which Italy tried to establish a protectorate. After a series of campaigns of varying fortune, the disastrous defeat of Adowa in 1894 put an end to expansion in this direction, and the Italians only retain the coastal territory of Eritrea with its chief town of Massawa. The white population is very small. The chief products are hides, wax, gum, coffee, and ivory.

An even less promising region is Italian Somaliland, which was acquired by purchase from the Sultan of Zanzibar in 1905.

The Imperialists of Italy showed greater wisdom when they turned their attention to Mediterranean Africa. The establishment of a French protectorate over Tunisia caused much indignation in Italy, and the aggressive attitude of the Young Turks towards Italian traders in 1911 gave Italy the excuse for a war in which the Dodecanese Islands and the Turkish province of Tripoli in North Africa were conquered. This colony, to which the Italians have given the name Libya, is clearly divided into two regions of different value. The western portion is little more than a part of the desert of the Sahara, but the higher

plateau of Cyrenaica has considerable agricultural possibilities under irrigation, and may be compared with the French colony of Algeria

Italians are also to-day turning an anxious eye on the international zone of Tangier. As a great Mediterranean Power, Italy resents the fact that the exits from the Mediterranean are controlled by other Powers. Italy is advancing a claim to share with Britain, France, and Spain in the administration and development of Tangier.

**Italy To-day**—It must never be forgotten that Italy is a new Power and a young nation, conscious of growing strength and often resentful of restraints upon her efforts at expansion. The rapid growth of population and the great possibilities of industrial development have given modern Italy an increased sense of her importance. In the years following upon the Great War, a period of violent social disorders set in, and the *regime* known as *Fascism* emerged as a reaction against a state of affairs which had become intolerable. Under this rule discipline has been a watchword, and the country has seen a great revival of industrial and administrative efficiency, and the moral tone of the nation has been considerably raised. The change, however, has involved the suppression of individual liberty to an extent which would not be tolerated in Great Britain. The vigorous tone of the present rulers is the expression of a determination to show the world that Italy is something more than the custodian of the treasures of antiquity, and that she has once more a part to play worthy of her great history.

## STATISTICS

### CLIMATE

#### TEMPERATURE (DEGREES FAHRENHEIT)

Station	J	F	M	A	M	J	Jy	A	S	O	N	D
Milan	32	38	46	55	63	70	75	73	66	56	44	36
Rome	44	46	51	57	64	71	77	76	70	62	52	46
Naples	47	48	51	57	64	70	76	75	70	63	55	49
London	39	40	42	47	53	59	63	62	57	49	43	39

## RAINFALL (INCHES)

Station.	J.	F.	M.	A.	M.	J.	Jy.	A.	S.	O.	N.	D.
Milan .	2.5	2.3	2.7	3.5	4.1	3.3	2.8	3.2	3.5	4.8	4.3	3.0
Rome .	3.1	2.5	2.7	2.6	2.2	1.5	0.7	1.1	2.9	4.6	4.4	3.6
Naples .	3.5	2.8	2.9	2.6	2.0	1.3	0.6	1.1	2.8	4.4	4.6	4.4
London .	1.8	1.7	1.7	1.7	1.8	2.3	2.6	2.4	2.0	2.7	2.3	2.1

## POPULATION OF CHIEF EUROPEAN COUNTRIES (1925)

Country.	Total Population.	Density per sq. kilometre.
Soviet Russia . . . .	93,943,000 (estimate 1923)	54.0
Germany . . . . .	62,642,000 (estimate 1924)	132.7
Great Britain . . . .	43,780,000 (estimate 1924)	189.3
Italy . . . . .	39,657,000 (estimate 1923)	127.9
France . . . . .	39,310,000 (estimate 1922)	71.3
Poland . . . . .	28,882,000 (estimate 1925)	74.4
Spain . . . . .	21,763,000 (estimate 1923)	43.1

## OCCUPATIONS

Country.	Percentage of Workers employed in		
	Agriculture, Forestry, and Fishing.	Mining and Industry.	Trade and Commerce.
Italy . . . . .	55.5	27.5	8.1
France . . . . .	40.7	35.8	9.8
Great Britain . . . .	8.1	32.1	22.2
Germany . . . . .	35.2	40.0	12.4

## GROWTH OF POPULATION OF ITALY

1861 . . . . .	25,061,801
1881 . . . . .	28,459,628
1901 . . . . .	32,475,253
1921 . . . . .	38,686,000 (estimated)

## IMPORTS AND EXPORTS, 1922

Imports.	£ million.	Exports.	£ million.
Cereals . . . . .	39.3	Silk and silk manufactures . . .	26.3
Cotton and cotton manu- factures . . . . .	20.9	Cotton manufactures . . . . .	13.0
Coal . . . . .	15.4	Fruit and vegetables . . . . .	10.2
Iron goods, machinery, etc. . .	9.3	Hemp, flax, etc. . . . .	5.0
Wool and woollen manufactures .	9.8	Meats, cheese . . . . .	4.7
Mineral oils . . . . .	7.7	Chemicals, colours, etc. . . .	4.4
Oils, oil seeds, fats . . . . .	6.9	Cereals . . . . .	4.2
Silk and silk manufactures . .	6.3	Automobiles . . . . .	3.3
Hides and skins . . . . .	5.4	Metals, machinery, etc. . . .	3.2
Coffee, sugar, etc. . . . .	4.9	Hides and skins . . . . .	2.8
Fish and fish products . . . .	4.6	Wines . . . . .	2.6
Wood . . . . .	4.3	Woollen manufactures . . . .	2.2

## HYDRO ELECTRIC POWER IN 1925

U S A.	9,130,000	Switzerland	1,490,000
Canada	3,230,000	Italy	1,450,000
France	2,500,000	Sweden	1,420,000
Norway	1,820,000	Germany	1,070,000
Japan	1,690,000	Great Britain	250,000

The figures represent H P. installed

## ITALY IN ENGLISH LITERATURE

Italia, O Italia, thou who hast  
The fatal gift of beauty.

BYRON.

The peasants from the village go  
To work among the maize, you know,  
With us in Lombardy, they bring  
Provisions packed on mules, a string  
With little bells that cheer their task,  
And casks, and boughs on every cask,  
To keep the sun's heat from the wine

BROWNING

Once did she hold the gorgeous East in fee,  
And was the safeguard of the West the worth  
Of Venice did not fall below her birth,  
Venice, the eldest child of Liberty  
She was a maiden city, bright and free,  
No guile seduced, no force could violate,  
And when she took unto herself a mate  
She must espouse the everlasting sea.

WORDSWORTH.

She looks a sea Cybele, fresh from ocean,  
Rising with her tiara of proud towers  
At airy distance, with majestic motion,  
A ruler of the waters and their powers.  
And such she was her daughters had their dowers  
From spoils of nations, and the exhaustless East  
Poured in her lap, all gems in sparkling showers,  
In purple was she robed, and of her feast  
Monarchs partook, and deemed their dignity increased

BYRON

He hath an argosy bound to Tripolis, another to the Indies, I understand, moreover, upon the Rialto, he hath a third at Mexico, a fourth for England, and other ventures he hath, squandered abroad

SHAKESPEARE, *The Merchant of Venice*.



The Genuois comen in sundry wises  
 Into this land with divers marchandise  
 In great Caracks, arrayed withouten lacke  
 With cloth of gold, silk, and pepper blacke.

The great galees of Venice and Florence  
 Be well laden with things of complacence,  
 All spicery and of grossers ware :  
 With sweet wines all manner of chaffare,  
 Apes and Japes, and marmusets tayled,  
 Niffles and trifles that little have avayled :  
 And things with which they fetely blere our eye :  
 With things not enduring that we bye.

HAKLUYT. (Vol. I.)

But Arno wins us to her fair white walls  
 Where the Etrurian Athens claims and keeps  
 A softer feeling for her fairy halls.  
 Girt by her theatre of hills, she reaps  
 Her corn and wine and oil, and Plenty leaps  
 To laughing life with her redundant horn.  
 Along the banks where smiling Arno sweeps  
 Was modern Luxury of Commerce born,  
 And buried Learning rose, redeemed to a new morn.

BYRON.

Naples ! thou heart of men which ever pantest  
 Naked beneath the lidless eye of heaven !  
 Elysian City, which to calm enchantest  
 The mutinous air and sea.

SHELLEY.

D. G.

## CHAPTER V

### THE IBERIAN PENINSULA

A TRAVELLER in Spain must inevitably feel that he is in a land of striking contrasts and wide dissimilarities of scenery, climate, vegetation and people. If he ask himself what are the characteristics of the typical Spaniard, he will find himself at a loss for a reply, as he calls to mind the independent Basque, the proud Castilian, the dissatisfied Catalan, the indolent Andalusian, for in few parts of the world can one geological formation produce such a variety of mentality, such a lack of unity, such a difference of type among its occupants. Yet it should be observed that the structure of the peninsula is the basis of these peculiarities.

Structure.—During the earliest geological era, known as the Archæan, while the earth's crust was still not strong enough to resist the eruptive forces within, so that veins of granite were driven upwards, at times reaching the surface, the cooling of the globe was causing contraction, and blocks of the crust were being upheaved and lowered along the faults or lines of weakness. Minor fissures occurred in all directions and were filled by a variety of chemicals, which formed the valuable minerals sought by man to-day. Such an upheaved crustal block forms the plateau, of which two-thirds of the Iberian Peninsula is composed. The plateau is in the main of flat-lying strata, which were laid down in Archæan or Palæozoic times. In the south-west, denudation by sea and atmosphere has levelled a large area to a peneplain, and later Mesozoic deposits have since covered it. At a later period, the margins of the plateau have been again unsettled by volcanic action, and even to-day the action of earthquakes, notably at Lisbon, point to an instability of the earth's crust. North and south of the plateau, the crust being pliant, the upheavals have resulted in folded mountains being raised, the Pyrenees and Cantabrian mountains on the north and the

Sierra Nevada on the south, which is continued under sea and rises again to the surface in the Balearic Islands.

**Relief.**—The Iberian Peninsula presents, then, a block plateau known as the Meseta, some four or five hundred miles across, roughly round in shape with a slight tilt downwards to the south-west. The once sharp, steep edges are now broken into mountains, rendering difficult the entrance to the centre, even where natural drainage systems have cut gashes into the solid

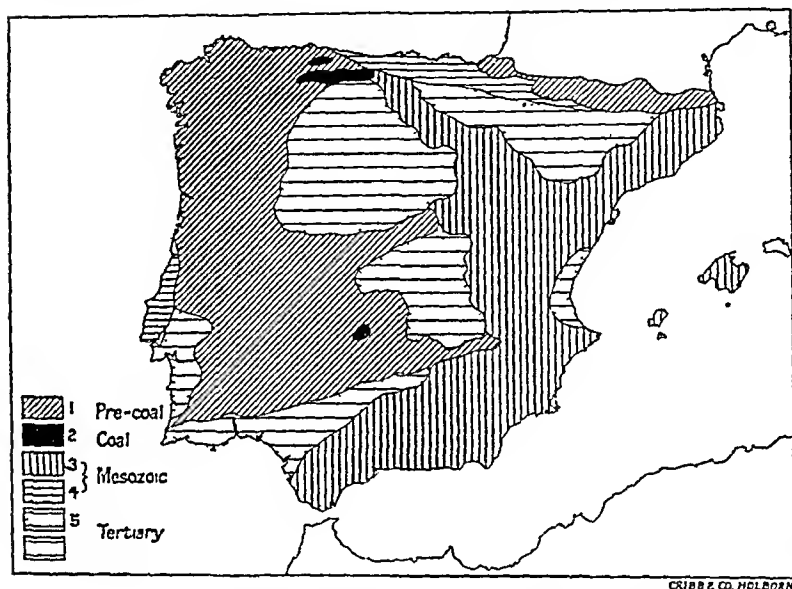


FIG 49—SIMPLIFIED GEOLOGICAL MAP OF THE IBERIAN PENINSULA

plateau. The southern edge appears as a mountain range, the Sierra Morena, overhanging the basin of the Guadalquivir. The eastern and north-eastern edges consist of irregular clusters of peaks and broken ridges, inextricably huddled together, while the Cantabrian mountains form the northern edge of the plateau. Owing to rapid denudation, all these mountains have split so as to have a saw-like edge, and so are known as of the sierra (= saw) type. They are, therefore, not easily crossed, and act as a hazardous barrier between the coast and the interior. On the Meseta itself denudation has left the harder rocks standing out in ridges,

running generally east and west, with minor spurs extending from these main features at right angles. Such ridges are the Sierra de Guadarrama, Sierra de Gredos, and Serra da Estrella, which form a line roughly north of Madrid, while south of Madrid and parallel to the first ridge are the mountains of Toledo, called variously the Sierra de Guadalupe, Sierra de Mantanez, and Serra da Saa Mamede. The average height

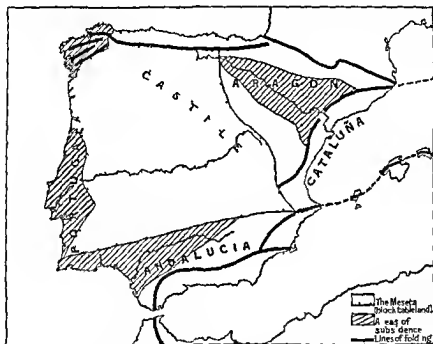


FIG. 30.—MAIN STRUCTURE LINES OF THE PENINSULA

Note the close connexion with the geological formation

of these ridges above the plateau is about 5,000 feet, and consequently communication across the plateau is rendered difficult.

The upheaval of the block so close to the sea has left only a narrow coastal plain, except in the south-west and in the lowland of Aragon, where the northern fault has outlined a course for the Ebro. The mountains in the north west descend into the sea, which has submerged the lower valleys of the mountain streams, thus forming *rias* along the coast. *Rias* differ from fiords in

having wider and deeper mouths, because their submersion took place at an earlier stage of their valley growth. The chief water-parting occurs in the complicated knots of mountains in the north-east of the peninsula, and thus the consequent drainage runs towards the west and is emptied into the Atlantic. The Minho, Douro, Tagus, Guadiana, and Guadalquivir rivers all take this direction and run in parallel valleys. In their headwaters, these are mountain streams, rushing torrents when filled by melting snow and in the summer often dry water courses. The rivers have cut back into the plateau and now flow in narrow gorges, over rapids and falls, on levels far lower than the plateau. The Guadiana, which flows largely through limestone formations, often carries its waters through subterranean channels, only appearing on the surface at intervals. The Guadalquivir (Wadi-el-Kebir = "the great river" of the Moors), follows the valley left by the fault, marking the edge of the block, as the Ebro does in the north. Though the Tagus is the longest river in the peninsula, the Guadalquivir has the richest supply of water. Like the other rivers, for half its length it is a mountain stream, but after the rapids of Montoro it enters a broad plain, the formation of its alluvial deposit. The channel is much silted up, wide, and shallow, with numerous sandbanks. The tawny colour of its waters bears witness to the amount of sediment it is bringing down from the plateau. The Ebro has to descend rapidly some 5,000 feet to the lowland plain (once a lake) which contains its lower reaches, and then its channel, though more level, is clogged by sandbanks and it must follow a tortuous course through the mountains of Cataluña before it reaches the Mediterranean Sea.

The soil of the plateau is largely impregnated with saltpetre, and the numerous streams which rush in torrents during the winter from the mountains soon become brackish, owing to the rapid evaporation caused by the climate and the absence of trees which would check it. River-beds appear, therefore, as dried water courses, only filling for a time in the winter, and the water percolates rapidly through the sandy and crumbling earth, for the soil, once on the surface, has long since been

washed away, and the plain is now covered by the sand brought down from the hills by the winter torrents

The granite intrusions, caused by volcanic eruptions in the Archæan Period, are visible in many parts of the peninsula, and appear as mountains in the Pyrenees, in the Asturias and northern Portugal, in the Sierra de Gredos and Sierra de Guadarrama, and in the Sierra Nevada. As in the Rockies, the line between ancient rocks and more recent deposits marks the position of mineral wealth, placed within the grasp of man. Spain and Portugal are rich in those minerals, intruded into tectonic fissures in Archæan times, and now exposed by the upheaval of the crustal block. Hence, the edge of the Meseta marks the line along which mining takes place. Coal is mined from the Carboniferous series, accessible in the Asturias, notably at Oviedo. Iron-ore is found nearby, especially in the district of Bilbao. The Sierra Morena is rich in lead, and bears also silver-lead, which is found even more plentifully, however, in a region stretching from Motril, on the south coast, to Cape de Palos, on the east coast. The mines of Rio Tinto and Tharsis, known to the Phœnicians, are still worked for copper. Quicksilver, zinc, manganese and rocksalt are also produced.

**Climate**—Three distinct climatic regions are observable in the peninsula: (1) a maritime one on the north and west coasts, (2) a continental plateau type in the Meseta, and (3) a Mediterranean in the east and south.

The peninsula being situated in the latitudes of the westerly winds, the west and north coasts are kept constantly supplied with the moisture brought from the Atlantic, as the water-vapour condenses, when raised to colder atmosphere by the mountains. It will be found, however, that the more south on the west coast, the more marked is a season of summer drought. Thus Oviedo in Lat  $43^{\circ}$  receives 17 per cent of its annual rainfall between June and August, while Lisbon in Lat  $38^{\circ}$  receives but 3 per cent of its annual rainfall in the same months. In the Basque provinces, Asturias, Galicia and northern Portugal, the climate is similar to western England, with mild winters and cool summers, the proximity of the sea tempering the effects of

the vertical slope of the sun's rays in summer and winter, for the prevailing westerly winds blow the atmosphere from over the sea on to the land, and thus, when the land is warmed in summer by the sun, it is cooled by the relatively cooler atmosphere over the sea, and, when the land cools in winter, it is warmed by the warmer atmosphere over the sea, which acquires a higher temperature from the waters of the Gulf Stream. Santiago may be taken as typical of the region with a January mean

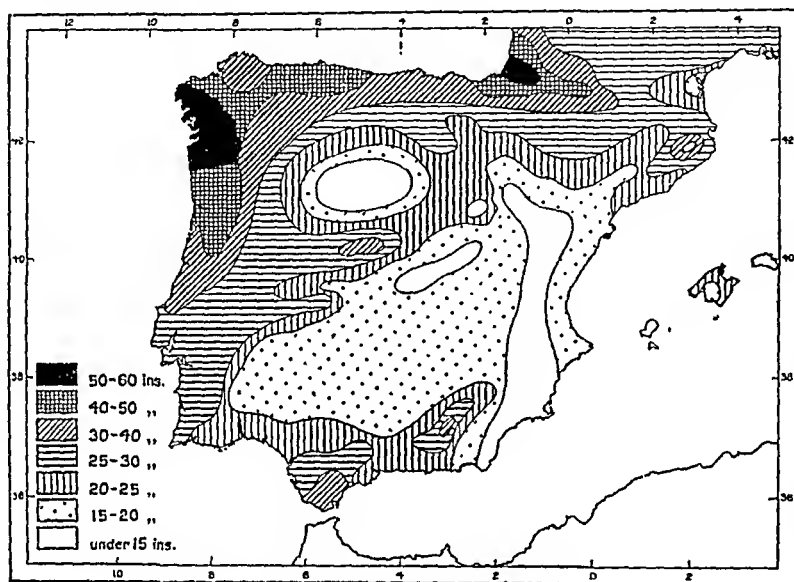


FIG. 51.—MEAN ANNUAL RAINFALL.

Compare Figs. 5 and 6.

temperature of  $45^{\circ}$  F. and a December mean temperature of  $65^{\circ}$  F., thus having a range similar to that of the Scilly Isles. The mean annual rainfall is 65 inches, 91 per cent. of which falls between September and May. The nearness of the plateau edge to the coast confines the maritime climate to a narrow region.

On the Meseta the structure of the peninsula has been largely the cause of the continental climate that pervades it. The surface is generally level, but the mountains surrounding the

plateau prevent the modifying effects of the sea being felt far inland, while the exposed faces of the rocks encourage rapid radiation. The central plain being of lower elevation than the surrounding mountains, the moisture bearing winds, after passing over the edge of the plateau, will descend to a warmer temperature, and thereby precipitation will be checked. In summer, the atmosphere of the centre becomes highly heated and so rarefied—a low pressure, consequently, is formed and the

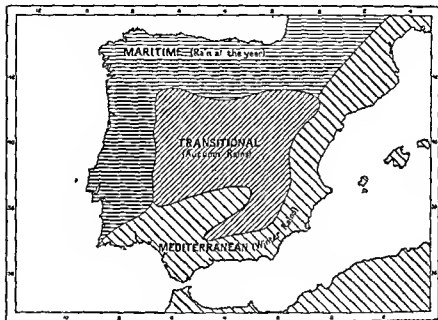


FIG 52—MAIN CLIMATIC REGIONS OF THE PENINSULA

Compare Figs 2 5 6

winds will blow towards it, but will bring no moisture. In winter, the centre becomes cold—very cold at so high an altitude—and a high pressure forms, forcing the winds to blow outwards towards the sea. The dryness of the air may be illustrated from Madrid, which enjoys on an average 131 cloudless days in the year, as compared with Greenwich, which has 22½. This absence of cloud, as in the case of Australia, allows the sun to beat down with all the greater force, but the ring of mountains, encircling the plateau, causes the sun to set early, and thus the daily range



of temperature is great. In July and August it amounts on an average to  $31^{\circ}$  F., while in December it is as much as  $16^{\circ}$  F. The sierras, which disturb the level of the plain, running in an east-west direction, are high enough to be snow-capped, and with the setting of the sun the cold air from the mountains will make itself felt in local winds, closing the low pressures formed over the plains during the day. Not unnaturally the native keeps his thick cloak by him at all times, ready to put on against the icy blasts of evening. Madrid has the greatest seasonal range of temperature of all European cities, with a July mean of  $76^{\circ}$  F. and a January mean of  $40^{\circ}$  F. Skating is common in winter, and much of the precipitation is in the form of snow. The configuration of the plateau results in continual winds blowing, which, though light, are piercingly cold, and a Madrid proverb describes the air as shrewd enough to kill a man, though not strong enough to blow out a candle (*El aire de Madrid es tan sutil, que mata a un hombre y no apaga un candil*). In the south of Castile in summer, the dry dust is blown into the air and forms a haze, known as calina, which so obfuscates the sun that the landscape is hard to distinguish except at close range.

The basin of the Ebro, though a lowland, is climatically connected with the plateau, for, surrounded as it is by high mountain ranges, it is entirely protected from the rain-bearing winds of the west, and in consequence the rainfall is very low. In summer, the air in the basin is intensely heated by the vertical rays of the sun, while in winter the height of the mountains and the obliqueness of the sun's rays prevent the air from being warmed; thus Saragossa has in July a mean temperature of  $76^{\circ}$  F. and in January of  $41^{\circ}$  F.

The climate of the southern part of the peninsula and of the east coast is of the Mediterranean variety, with hot and dry summers, and mild and wet winters. The lower latitudes show that the force of the sun will be sufficient never to allow the temperature to fall very low, and the swing of the thermal equator, caused by the seasonal movement of the sun north and south of the equator, shifts the mantle of atmosphere, surrounding the globe, northwards in the summer of the northern hemisphere,

so that between latitudes  $30^{\circ}$  and  $40^{\circ}$  the prevailing winds will be from the east instead of the west. This east wind is the trade that blows all the year in lower latitudes. On the west coasts of continents, this wind will be felt as hot and dry, having passed over a wide area of land. Thus the summer months of these regions will be marked by an extreme drought, but in the winter they will be visited by the westerlies, bringing moisture from the ocean. The east coast, protected from the westerlies by the Meseta, will receive a smaller supply of rainfall than the rest of the region.

**Vegetation** —The natural vegetation of a region is dependent on the climate and the soil, and, therefore, in the Iberian Peninsula it is not to be wondered at that a variety of types is to be found. In the maritime region of the north and north-west, where there is a constant and heavy rainfall, forests of oak, beech, and chestnut cover the slopes of the Pyrenees and the Cantabrian Mountains. In the valleys lush meadows are to be found. The apple is the representative of the fruits, and is grown in sufficient quantities to make cider the local beverage. On the southern foot of the Cantabrians, a fertile soil exists which is capable of growing rich wheat harvests.

The mountains are inhabited by the ibex, the eagle, and the vulture, as well as most of the birds commonly found in England. The wild bear is found in the Cantabrian Mountains and in the mountainous parts of Portugal.

The Castilian plain presents a monotonous, brown-yellow, undulating semi desert. Where a mountain stream has not yet entirely evaporated under the sun, a little verdure may be seen, but for the most part the aridity of the region and its monotony chiefly impress the eye. The sides of the hills, rising from the plain, are scored by the marks of the winter rains or the effects of frost, and, in spring and summer, present the appearance of grotesque shapes in sand, no longer adhesive. Occasional patches of fir and oak bear witness to a time when vegetation was more luxuriant, for in the fourteenth century the plain was well planted with trees, and as late as the sixteenth century a contemporary writer describes Madrid as having forests near by, filled with stag, boar,

and bear, but an Englishman writing in 1780 complains of the lack of trees in the same region. No doubt the deforestation was largely caused by the oak, demanded for building Philip II's fleets, being taken from these forests, and, with the characteristic Spanish lack of foresight, not replanted. The Castilian farmer, too, has an instinctive objection to trees from an idea that they will cause the ruin of his crops by harbouring birds, but it is the absence of trees that to a large extent causes the aridity of the soil, for, besides affording shade to the crops, trees by their roots help to grip the loose soil, so that it can hold moisture longer, and by their leaves check evaporation, so that the refreshment of rain and dews is much curtailed. In places, an impermeable subsoil holds up the water, which has sunk through the loose sand on top, and here wheat and rye may be cropped. In Roman times, undoubtedly, this country was more fertile than to-day, for it earned the reputation of being one of the world's granaries, and the constant practice of deforestation has reduced it to its present desert condition. Such vegetation as now survives is evergreen, with leathery leaves and spiny by nature. Rock-roses, thymes, thistles, brooms, and heaths are characteristic of the plant-life. In wide areas, mostly the east and south-east, the soil is impregnated with salts, derived from the gypsum which abounds, and here halophytes or plants adapted to salt conditions only are found, sparsely scattered. In places a more continuous vegetation exists, mostly esparto grass.

In places this steppe gives way to a complete desert, as between Almeria and Alicante; here and there is an oasis, such as at Elche, covered by date palms, similar to those in the African desert.

Over the steppes, vast quantities of sheep and goats succeed in getting food, after wide wanderings in the care of herdsmen. This is the home of the famous Merino, exported to Australia to found a breed there. Its modern representative in Spain shows, however, a degenerate stock.

Where the Mediterranean climate prevails, the evergreen and succulent plants, characteristic of the climate, grow; the vine,

oranges, lemons, pomegranate, melon, are the fruits, and the olive abounds.

The valley of the Guadalquivir has a most marked diversity of vegetation. The olive grows abundantly everywhere, on the north side of the Sierra Nevada as high as 3,300 feet, on the south side up to 4,300 feet. Above the olive, forests grow as high as 5,300 feet, with chestnut, cherry, mulberry, and walnut. Above this belt again, up to 8,500 feet, is to be found a zone of grasses, juniper, broom. Thus the effect of altitude on vegetation is illustrated. On the coast tropical plants, sugar, cotton, bananas, oranges, dates, and carob-beans flourish, as well as the vine, which especially is to be found on the western edges of the coast ranges, centring round Jerez and Málaga. On the southern side of the Sierra Nevada barren areas are prominent, the only plant life appearing to be the prickly pear.

**Agriculture**—Spain is naturally an agricultural country and about four-fifths of it are productive. Of the productive part one quarter is given over to grass land and orchards, and three-quarters are arable. Except in the west and north-west, there is not a sufficient rainfall to allow of agriculture being carried out successfully, unless irrigation is practised. In both Spain and Portugal agricultural methods are of a most primitive kind. Each village has its threshing-floor, where donkeys and oxen tread the grain from the wheat, while winnowing is done by tossing the wheat into the air and leaving the wind to blow away the chaff. Land is usually allowed to lie fallow every third or fourth year, so that the moisture may be retained in the soil, and plants are sown so close together that only the most superficial harrowing can be attempted, and evaporation leaves the surface very dry. Gradually improved methods are being introduced by emigrants who have returned from South America and Mexico, and now in Spain co-operative societies, which have combined in a national society, are springing up, especially in the parts held by small landowners, mostly the north-west and the south-east of the peninsula, to provide instruction, machinery, manures, irrigation, as well as cheaper systems for selling produce or canning it. Wheat, barley, rye, and maize are the chief cereals, grown for home consumption.

At least 4,000 square miles are artificially irrigated, especially Valencia and Murcia being fertilised by this method. Here, however, the ancient works of the Moors and even the Romans are still in use. Water is often pumped up from a well by the agency of the ubiquitous donkey and a succession of pails attached to a wheel, and is then emptied into channels which have been cut over the area to be watered. The Moors cut canals for long distances from the tops of mountains and so conveyed the water, with the help of aqueducts, down to the plains. These irrigated areas are known as *huertas* in Valencia, as *vegas* in Andalusia. Here oranges are extensively cultivated, and about 92 per cent. of the fruit is exported, mostly from Seville, which specialises in a bitter orange, used for the making of marmalade.

The quality of wine depends upon the species of vine and the climate and soil in which it is grown. A belt of soil, strongly impregnated with lime, lies in the district of Jerez de la Frontera, and this has located the making of sherry. This soil, some three feet deep, is able to preserve its humidity throughout the summer, while under it is an impermeable stratum. American vines, suited to the soil, are planted, and to these are grafted the "Palomino" grape, which produces the richest sherry. But the high quality of this wine would not be preserved were it not for the delicate treatment it receives. Everything is sacrificed to quality, and the special pruning so reduces the production that each vine produces only about 2 lbs. of grapes.

Before planting the vines, the ground is broken to about 3 feet in early summer, so that all weeds may be scorched by the sun. Holes are then dug, about 900 to an acre, and in each is placed an American vine, which has already grown for a year in a nursery; a fertiliser is then used and the soil replaced. The second year grafts are made, and in the third year the vines are pruned, leaving only two or three buds, so as to ensure a robust plant. At the time of vintage grapes are cut only when ripe and they are then sun-dried for twenty-four hours. Next the grapes are placed in wooden trays and are pressed by men, wearing shoes grooved with round-headed nails, so that the pips, containing acrid matter, remain unbroken between the

grooves The mass of grapes is next heaped round a screw, and the whole enclosed with bands of esparto grass, and the top of the press is placed on the screw and pressure maintained by two long arms for turning the screw

The unfermented wine, or "must," is run off into butts, and passes through two stages of fermentation, the first, known as *fermentacion tumultuosa*, lasting several days and the second some months A careful selection and mixing complete the process, and ensure the standard of each grade being maintained

In Spain, vineyards are particularly productive in the fertile valley in which Málaga stands and round Alicante, as well as in the district of Jerez, while in Portugal the most famous vineyards are to be found in the Douro valley, in a district called País de Vinho (vine country), and the chief port and centre of the industry, Oporto, has given its name to port wine About one-tenth of the cultivated land of Portugal is occupied by vineyards

The importance to the grape of direct sunshine to produce the richest flavour leads to vineyards being usually planted on the southern slopes of hills, and so, to enable the soil to retain moisture round the roots, the sides of the hills must be banked up in terraces

The olive, though it grows wild in the greater part of the peninsula, requires careful culture and severe pruning to produce the best results The olive bears fruit every other year, and takes 30 years to mature, after which it will continue to bear for about 80 years The oil pressed from the fruit acts almost everywhere as a substitute for butter, especially in the more arid regions It is reckoned that, whereas the Englishman eats about 17 lbs of butter per year, the Spaniard consumes the equivalent of 25 lbs in olive oil

Industries—In spite of the great mineral wealth of Spain, metallurgy is still backward, and quicksilver and lead are the only minerals which are fully treated Only a small proportion of other extracted ores is treated, and the greater proportion is exported As much as 25 per cent of the total imports are metallurgical products Various companies are now taking

the matter in hand and an improvement is imminent. Pyrites and iron industries are handicapped by foreign competition from countries where the ores are more accessible and easier to exploit, but Oviedo, with its port at Gijón, has profited by its coal mines being near the iron, and iron industries have grown up, including a government arsenal. Bilbao, similarly placed, has glass and chemical factories. Oviedo, Bilbao, and Santander are all mining towns, and their proximity to the coast enables them to ship their heavy ores for export at a low cost. Much of the iron-ore exported finds its way to the British coalfields where the iron deposits have been worked out. Cardiff and Swansea receive large quantities. Wolfram is collected in the northern part of Portugal, but the mining industry has scarcely been developed as yet in this country.

The medieval fame of Toledo for sword-blades remains to this day, though now only a small steel factory remains at work. In Webster's *Vittoria Corombona*, Act v. Sc. VI., we have :

Oh, what blade is't ?

A Toledo, or an English fox ?

In the salt-marshes round Cadiz, salt is procured by evaporation of sea-water, and pyramids of salt are to be seen over a wide area, bearing witness to the great salinity of the sea here and the strength of the sun.

The growth of the mulberry tree has given rise to the culture of silk-worms and silken goods are manufactured in Valencia, Murcia, and Seville. In Cataluña, cotton has been successfully grown, and Barcelona, assisted by the water-power from the mountain streams behind, manufactures cottons and textiles. The surrounding pastures of Burgos have led to cloth and hosiery manufactures.

Fisheries.—The *rias* of the Galician coast have encouraged fishing, and the numerous gulfs have offered safe harbourage to small boats. Consequently, rich fisheries of sardines and tunny take place off these coasts and supply much of the fish for the tinning of Nantes. Tinning also gives employment in Corunna and Vigo, which are the chief ports of the fishing industry.

**Communication and Transport.**—The structure of the peninsula has and always must make communication difficult. The mountains ranging across the plateau are only pierced here and there by passes, and the steep-sided, deep, and narrow gorges cut by the rivers form obstacles rather than assistances to movement. The Guadalquivir is the only river that is navigable for any distance from the sea, and Seville, situated at the head of the

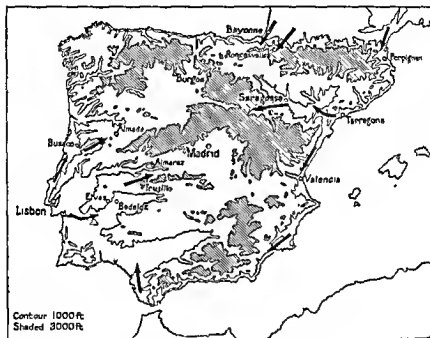


FIG 53—NATURAL ROUTES OF THE PENINSULA

Showing the influence of relief

tide-way seventy miles from its mouth, can receive vessels of 3,000 tons. The Ebro, owing to its tortuous course and its frequent sand-banks, is navigable for only fifteen miles—as far as Tortosa—to sea-going vessels.

The roads, in the main, are bad for transport, owing to the friable nature of the soil, which makes them dusty in summer and muddy in wet weather. Metalled roads are gradually coming more into existence, especially in the Basque provinces, where the people show more enterprise and the necessity for them is more



obvious in mining districts. A study of Wellington's campaigns in the Peninsular War testifies to the obstacles to movement from the lack of roads. From France into Spain there were but two roads, one from Bayonne, on the western end of the Pyrenees, through Vitoria to Burgos, where the road divided, either passing through the Guadarrama by the Escorial Pass, or by the Somo Sierra Pass (farther to the east) and so to Madrid; the other road, from Perpignan round the eastern end of the Pyrenees to Tarragona, where the road divided into two branches, one leading to the south of Spain through Valencia and the other to Madrid through Saragossa. The road taking the Roncesvalles Pass in the Pyrenees was impracticable to wheeled transport.

Two main roads join Lisbon and Madrid: the first crosses the frontier at Elvas on the Portuguese side and Badajoz on the Spanish, pierces the mountains of Toledo at Trujillo, and crosses the Tagus at Almaraz: the second takes the coast and continues to Oporto, but branches to the east at Busaco, and so, keeping to the north of the Sierra de Gredos, passes through Ciudad Rodrigo to Salamanca. This road was protected on the Portuguese side by the fort of Almeida, on the Spanish side by the fort of Ciudad Rodrigo during the Peninsular War.

The roads generally suffer from a poor surface, but, owing to a recent decentralisation of road control to the local governments, it is expected that in Spain at least there will soon be an improvement, and transport by motor-lorry will then be the more encouraged. In the agricultural districts, road transport is the more necessary if developments are to ensue, because the railways have been laid down rather with a view to conciliating the land-owners from whom the original concessions had to be obtained than to meeting the demands for rapid transport of local agricultural products.

The development of railway transport has been slow owing to the prodigious engineering difficulties caused by the mountainous surface, and by the lack of capital. The railway companies still rely largely on foreign capital, and development is handicapped by the fact that the controlling boards of the two chief companies (the Camino de Hierro del Norte and the Madrid-

Saragossa-Alicante Company) still reside in Paris, while the West Galician Company is in the hands of a committee sitting in London. Railway rates are still high, and the transport of coal from Asturias to Madrid costs more than the raising of the coal itself. The capital, in the centre of the plateau, naturally becomes the railway-centre. The main railway-routes are

(1) From Madrid the line runs north over the saddle between the Sierra de Guadarrama and the Sierra de Gredos to Avila,



FIG. 54.—CHIEF RAILWAYS OF THE PENINSULA

Note the use of river valleys

thence to Medina del Campo (where it is met by a line from Lisbon, Coimbra, and Salamanca), and Valladolid. Taking the valley of the Arlanzon River, the line reaches Burgos, and thence by Vitoria it passes to San Sebastian, on the narrow coastal plain at the western extremity of the Pyrenees. This is the main railway to Paris.

(2) An alternative route into France leaves Madrid in a north-easterly direction, making use of the valleys of the River Henares and Jalon, by the latter of which it descends to Saragossa in the

Ebro basin. Passing down the valley, it reaches the coastal plain and so Barcelona, whence it arrives in France at Narbonne. At Barcelona connection is made with the east-coast railway to Valencia and Alicante.

(3) A line runs south from Madrid to Alcázar de S. Juan, where it forks, one line joining up Alicante, the other descending into the Guadalquivir basin, and so to Córdoba, Seville, and Cadiz, by way of the Pass of Despeñaperros at the east end of the Sierra Morena.

(4) A line takes the valley of the Tagus near Toledo and passes down to Lisbon.

The Spanish Government have a project in hand by which 1,000 miles of additional railway will be laid in the next six years, to link up many of the out-of-way places, which at present are served, if at all, with an antique diligence system.

**Towns.**—The structure of the country, resulting in the semi-desert nature of the central plateau, has led to the majority of the towns being round the coast. Fine natural harbours have given an importance to Cadiz and Cartagena, and were discovered and occupied by the Phœnicians and their off-shoot, the Carthaginians, respectively in early times. A rich hinterland provides them with products for export. The other large ports are located on river estuaries, Oporto on the Douro, Lisbon on the Tagus, Valencia on the Guadalaviar, Barcelona on the Llobregat. Corunna and Ferrol are on an excellent natural harbour, but owing to their unproductive hinterland, like Milford Haven, they have not risen to commercial importance.

Where passes pierce the mountain ridges, towns have risen to hold the strategic position or because movement has been compelled to be directed to such gates in the wall. Thus commanding the entrance into Spain by the western route round the Pyrenees, Burgos and Valladolid may be noted. Each in turn became the capital of Old Castile, because communication to and from these points was easier than elsewhere. Pampeluna rose in a similar way as the capital of Navarre, a kingdom astride the Roncesvalles Pass and ever a strategic bone of contention between Spain and France. Vitoria is situated in the plain below

the purely mountainous region, which Wellington had to contest in order to gain an entry into France. Leon was originally the head-quarters of the Seventh Legion, the derivation of the modern name, who were stationed in the mountainous region during the Roman occupation to keep order among the bellicose hill-men. Saragossa is too an ancient Roman town, Colonia Cæsar Augusta, and commands the Ebro basin, just below where the important tributary the Jalon joins the main stream. Cordova commands the valley of the Guadalquivir, and thus became the Moors' military centre, soon after their occupation. So too did Granada, which marks the crossing of several routes across the highlands of Andalusia. The walled towns of Segovia and Avila stand at the northern end of passes over the Sierra de Guadarrama.

The majority of these towns—in fact all, except where modern industrial activity has made its mark—retain their mediæval appearance. The houses are usually huddled together, along narrow streets, where often it is forbidden to take wheeled traffic. The narrowness of the streets was no doubt a solution of the climatic problem. The lines of houses, being close together, offered more protection against cold winds and brought more warmth to the inhabitants in the nights, whereas by day the rays of the sun could pour their full force upon the street only at midday. In Castile, the towns are perched on the hill-sides, where more moisture may be obtained, for the plain itself is unable to support a large concourse of people, and so little has been the increase of population, since the expulsion of the Moors, that rarely have suburbs arisen outside the mediæval walls. The typical house is built around a square courtyard or *patio*, with a cloister, so that the occupant may always have shade by day and a place to walk in the evening. Outside walls are commonly without windows and are unadorned, with heavy, grided doors, because many were built for defensive purposes and the house was made to face inwards. This arrangement of a house is due principally to Moorish influence, for the taste of the Moor demanded a garden of beauty and colour in which to take his siesta, and to-day many of these *patios* are filled with orange trees and their blossoms, and are sprinkled by

fountains, for a well was a very necessary adjunct to every house. Each town has a main square or *plaza mayor*, usually with porticoes on each side, again to provide shade in the heat of the day and places for exercise when the temperature falls later.

Madrid appears to-day as an entirely modern city, designed after the fashion of Paris, with broad boulevards, down which run avenues of trees, and with pretentious public buildings and offices. It has become the capital of Spain because of its central position, and was selected first by Charles V, who made of it a country residence, because he found the climate there good for his gout. The redemption of the whole country from the Moors had made it necessary to have a capital more central than the old capitals of Burgos and Valladolid had been, from which former kings of Castile had ruled. Philip II finally settled on Madrid as his capital, thereby exhibiting the despot's might, as vanquishing the controls of Nature, by establishing a city in the heart of a desert, a feat emulated later by Peter the Great, when he ordered his new capital of Petersburg to be founded on a marsh, a situation as unsuitable for human habitation as a desert. Some miles out of Madrid, the same monarch caused to be raised under his personal direction his palace of the Escorial, as severe an architectural monument as can be imagined of his gloomy disposition. His religious fervour is witnessed by the chapel of prodigious dimensions, around which the palace stands, and was the forfeit he imposed upon himself for the sacrilege he committed against the Church of St. Sebastian by bombardment at the Battle of St. Quentin.

Toledo, once a capital, owing to its magnificent position on a rock, which is almost entirely surrounded by an arm of the Tagus and thus rivals Besançon and Carcassonne for situation, is now the ecclesiastical centre, and its colossal Gothic cathedral is the see of the Archbishop. Here lived el Greco, an artist, whose sacred pictures are to be seen in the churches, and in the house in which he lived, which is now kept as a museum in his memory.

Gibraltar, which became a British possession in 1704 and became a constant source of dispute with the Spaniards in

succeeding years, stands on a rock, which rises on a narrow promontory, running south a few miles east of the southernmost point in Spain, to form the Bay of Algeciras. The rock covers about two miles, and its sides rise steeply except on the west, where the town has just had room to find a place. Owing to its limestone formation, gun galleries have been excavated without great difficulty in the solid rock, and the stronghold has been rendered impregnable, as was proved by its resistance to siege in 1779, under General Eliot. The rock is joined to the mainland by a sandy waste, about half a mile wide, which is the neutral zone between Spanish and British interests. Gibraltar commands the Mediterranean in the sense that it is impossible for an enemy to prevent us from keeping a look out from there in time of war. It was this that enabled Nelson to achieve such success in the Mediterranean, for no ship could leave the harbour of Toulon for the Atlantic without Nelson's knowledge. Thus he could prevent the junction of the French and Spanish fleet, which was resting in Cadiz. This was done in 1797 off Cape St Vincent and in 1805 off Cape Trafalgar. Besides its supreme military importance, Gibraltar is a coaling station and has wide commercial interests.

**People**—The structure of the peninsula ordains that entry into it can only be made by men moving on land by the passes at the extremities of the Pyrenees, or from the south by way of Gibraltar. The earliest inhabitants came by the last route from Africa. Later a race moving westward from Asia and occupying the highlands of Europe penetrated into Spain. Their descendants may still be found in the Pyrenees and the Cantabrian mountains. The Phœnicians and Carthaginians, who came by sea originally for trade, settled only on the coast and had little racial influence. Nordic influences are to be traced to the invasions of the Goths in the fifth century A.D., when Rome was beginning to lose her grip of her empire, but the traces are slight.

At the beginning of the eighth century began the Moorish invasions, again from Africa. This race was composed of Arabs and Berbers, but racially they belong to the Mediterranean stock.

they found already there. In fact, it should be noted how much more closely Spain is united with Africa than with Europe.

At the present day the population is almost uniform, but physical environment has divided the people into separate units, and especially the structure of the peninsula has developed diverse characteristics, which all through history have caused disunion and to-day are playing their part in the separatist tendencies in both kingdoms.

The spaciousness of the Castilian plain, perhaps too the placidity of its rivulets in their upper reaches, have produced in the Castilian a contemplative attitude of mind: the vast expanse of country over which his eye can roam (and the dryness of the atmosphere extends the vision) has engendered a sense of wide possession: the lack of intrusion from without, due to the undesirability of his plain to those outside, has given a feeling of lordly superiority over other men and thus the pride, coupled with dignified bearing and lofty manners, found in the Arab of the desert, has become the very keynote of the Castilian character. When central control over the peninsula was established, it was the Castilian language that was forced upon it officially, and it has become the literary language to-day, but the difficulty of communication between the widely separated villages of the plain has led to a variety of dialects among the Castilians themselves, and the conservatism of their proud nature tends to preserve them. The configuration of the peninsula, while it produced the Castilian, caused in him a difference of temperament not found in other inhabitants, a difference which, from his very nature, made difficult a coalescence of ideal with his fellow-men's.

The Basques are a people apart, quite out of sympathy with the plainsmen of Castile, and their preservation is due to the configuration of the peninsula. As in Britain, the oldest races have retired before the more advanced invaders into the mountains, where they have been protected from intrusion and where isolation has tended to preserve their ancient customs. Such has been the case with all mountain peoples, e.g. the Highlanders of Scotland, the Swiss, or the Albanians. Mountain life demands of the individual that he should act

independently, and the inter-montane valley where he lives becomes the epitome of his existence, and so there grow in him an independent spirit and a love of freedom. Thus the Basques have never been entirely defeated, and to-day, as always in the past, they are a source of anxiety to any central government that may be established in the peninsula. In Roman times, a garrison had to be kept amid these mountains at Leon.

The structure of the peninsula has isolated the Galicians, and communication is almost as difficult to-day as it has been in the past. The rockiness of their country has made agriculture impossible, except in occasional patches, and so most have turned to the sea and become fishermen, but isolation has made them more backward than other parts. Thus the Gallego has ever been the "helot" and annually he migrates to Portugal to provide labour in the vintages.

Cataluña has been structurally separated from Castile, and east of the Meseta edge grew up the kingdom of Aragon. The climate of the Ebro basin has been encouraging to agriculturists provided they use the waters of the river to the best purpose by irrigation. Separated as they were from Castile by the mountain-barrier, and being self-sufficing so far as food supplies went, a kingdom easily arose in rivalry with Castile, and though at the end of the fifteenth century the two crowns were united under Ferdinand and Isabel by marriage, the opposition continued and still is shown in the tendency of the north-east provinces to be "against the government" of Madrid, which no doubt partly accounts for the constant labour unrest in Barcelona. The Catalan is more in sympathy with the Provençal, being allied with him by race and language, than with the inhabitants of the peninsula. His country stretches to the foothills of the Pyrenees, so that, besides receiving infusion from the most enterprising of the Mediterranean seafarers, including Greeks and Phœnicians, he has also become intermixed with all the land tribes who have arrived from the north. The Catalans have, therefore, inherited the vigour of a mongrel race, and they are to-day the most energetic, the most enlightened of the races in Spain, as is testified by their industrial activity and density



of population. This province is the most densely populated in the country, with four hundred people to the square mile. The vigour of brain and energy of mind are to be accounted for as with the Babylonians in Mesopotamia. They found themselves in a semi-desert, which could be rendered fertile if water could be applied regularly to the soil. A thoughtful system of irrigation was introduced, and the Catalans have preserved their

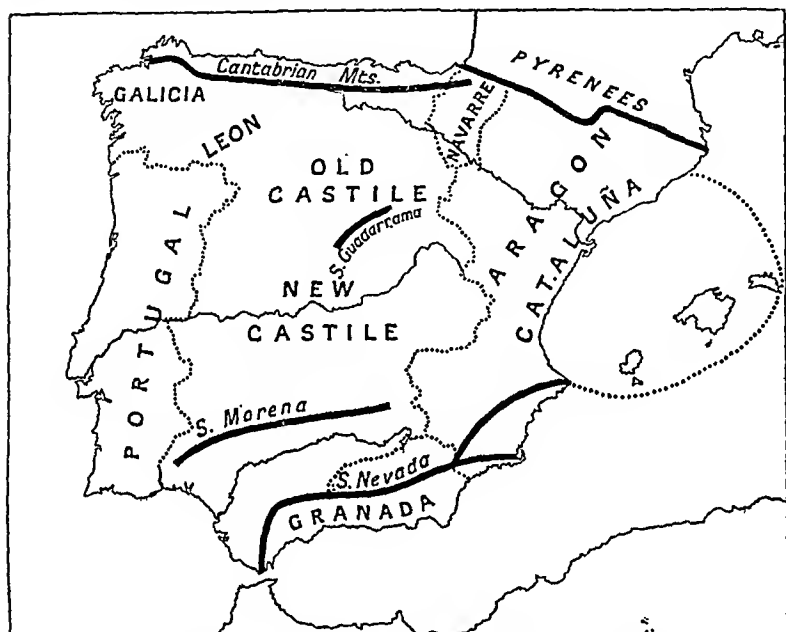


FIG. 55.—THE OLD KINGDOMS OF THE IBERIAN PENINSULA.

This diagram should be compared with Fig. 50. The relation between the main political divisions during the Middle Ages and the structure lines will then be made clear.

spirit of independence and desire for looking after themselves, which they acquired when battling with Nature to maintain a livelihood in an otherwise barren country. To turn such a region into a productive area demanded a habit of assimilating new ideas, and this habit remains, so that it is not to be wondered at that Barcelona stands out as the storm centre of industrial disputes and is a constant source of anxiety to the central government of Madrid.

It is possible that the Catalans differ from other Spaniards because the blood of the Mediterranean race predominates there more than elsewhere, as it does in Provence and the Balearic Isles. The fact that in all these regions the Mediterranean climate is most marked would suggest that it was only, or mostly, in this climate that the Mediterranean race with its racial characteristics would survive. The Catalan has all the ethnological marks of the race, the long head, dark complexion, and short stature, whereas the Franks were fair and tall. Unfortunately the head seems to be the most certain test in these matters and in this case it proves nothing as both Nordics and Mediterraneans were long-headed. If this theory is true, it is reasonable to suppose that the Catalans were protected from their Frankish invaders by the marshy character of their plain, which was wet enough in the Peninsular War to prevent troops passing by the eastern route between France and Spain. It is natural too that the race should predominate which found an environment so eminently suited to its way of life.

The structure of the country provided in the south a land suited to the Moors, who came from the dry deserts of Africa, and, moreover, they found a country which could soon be brought to a high state of productiveness by applying their agricultural methods which experience of the desert had taught them. The high ground of the plateau must remain dry, but on the low ground precious water was being allowed to be wasted. Arriving first by the narrow seas at Gibraltar, they instinctively made for the water-courses they found similar to the *wadis* of their native land. The valley of the Guadalquivir was to them an oasis on a large scale, and they soon brought its broad plain under cultivation, after draining the *Marismas*, or marshes, some thirty miles below Seville. Owing to the structure of the peninsula, the Guadalquivir offers the one natural entrance to the plateau, and this became the natural means of entry to the Moors. On the high ground to the south of the valley stood Granada. Andalusia, then, is the part of Spain longest held by the Moors, and where they have left their most permanent remains in their buildings, such as the Alhambra at Granada or the mosque (now

the cathedral) at Córdoba. The luxuriance of the vegetation, rendered possible by the irrigation system of the Moors, still in existence to this day, has enabled the people to live too easily, and an easygoing contentment is characteristic of the Andalusian, while perhaps a sense of Moorish retirement and chivalry has been handed down to them in their courtesy and elegance of manners.

In the narrow coastal plain below the plateau on the eastern edge, south of the Ebro basin, the Moors found too an oasis, capable of high productiveness when a proper system of irrigation has been effected. Here are the provinces of Valencia and Murcia. A curious survival of Moorish occupation may be witnessed every Thursday at the Gate of the Apostles of the Cathedral at Valencia, where a tribunal of peasants sits to decide grievances over irrigation. This democratic institution keeps no records and its law is traditional, yet its verdict is never disputed. The richness of the soil made Valencia the envy of all who looked down on her luxuriant plain, and while the ease of life has led its inhabitants to indolence, the envy of their enemies has inculcated a reserved and suspicious demeanour.

The structure of Portugal, in the north the extension of the Meseta, in the south a lowland widening towards the sea, has made the Portuguese look outwards to the ocean rather than inwards to the land. It is thus that they have become a sea-faring nation. The numerous promontory points standing far out into the ocean create that yearning for crossing the sea that the visitor to the seaside resort exposes by first making for the end of the pier. Possibly this yearning prompted Henry the Navigator in selecting a site for his observatory at Sagres. The call of the waves, as well as scientific research, surely affected him. The Portuguese naturally became pioneers in the opening up of the New World, and rivalry over possessions thus gained separated Portugal and Spain politically.

**History.**—The physical features of the country, by making union difficult, have facilitated invasion by a united people, and so long as that union remained the invading races have spread their influence far, but the disintegrating forces have apparently always sooner or later asserted themselves.

Under the Carthaginians —The Carthaginians invaded Iberia under Hamilcar Barca in 237 B.C., owing to internal political rivalries, and he aimed at establishing a government of his own. One motive seems to have been to obtain mercenaries of the same type as they had obtained in Mauretania, and the Iberians, owing to their affinity, were likely to do equally well, with this advantage from a government's point of view that the sea would now divide them from their homes, which would militate against mutinies and revolts on the part of the mercenaries, such as had been a constant danger in Carthage. Spain was also regarded as a new vantage-point from which to attack Rome, and it was the siege of Saguntum in 219 B.C. that opened the Second Punic War. New Carthage (Cartagena) had been founded in 228 B.C. The Carthaginians, who at one time controlled a great part of the peninsula, gave way before the Romans, who swept down upon them from the north-east by the route through Languedoc, which Hannibal had used to invade Italy in the Second Punic War.

Roman Supremacy, 208 B.C.—A.D. 410 —After the Second Punic War Rome set about subjugating the whole peninsula, but there were always hill-tribes, especially in the north and north-west, who gave opportunities to Roman generals to lose or win reputations. Among the latter was Julius Cæsar, who in 45 B.C. finally defeated his rival Pompey at Munda in the south of Spain. Under the Empire, Roman rule was firmly established and Roman Law was introduced. Their language became general, and both Spanish and Portuguese are directly derived from it. Besides their military roads, many of their buildings remain, such as the bridge at Alcántara and the aqueduct at Segovia, both of which are still in use. Christianity was introduced during the second century, and many of the literary names of the Roman empire come from Spain, the two Senecas, Lucan, Martial, Quintilian. Horace apparently is referring to the culture of the Spain of his day in his phrase *peritus Hiber* (*Odes* II, xx, 20). Outside events in the Roman Empire had important effects on the history of Spain. The fall of Jerusalem scattered the Jews, many of whom settled in Spain, where they subsequently became an important element in the population. The sack of Rome

in A.D. 409 by Alaric weakened Rome's grip of her empire, and Spain fell to the hordes of Vandals, Alans, and Sueves from the north. Ataulph the Visigoth entered Spain primarily to assist the Romans against these hordes, but the Visigoths stayed to govern.

**Visigoth Supremacy, 410-711.**—The Visigoths introduced a new element by which they hoped to cement the warring interests of the country into one. Leovigild, King of the Visigoths (567-586), sought to force the official religion of his people, Arianism, upon all, but Catholicism had won a firm hold on parts of the country, and his successor Reccared, showing a greater tolerance, even though it was perhaps fostered by political insight, called a Council at Toledo to decide between Arianism and Catholicism. The decision being given in favour of the latter, Reccared himself became a Catholic, and Catholicism became the official channel of spiritual salvation. In spite of a succession of statesmanlike kings, the structure of the peninsula again led to petty lordships arising in the country, and eventually rivalries between king and nobility led to a period of turmoil, which ended in the Bishop of Seville inviting Berbers from North Africa to assist him against the last king of the Goths, Roderic, at the beginning of the eighth century. Roderic's stronghold was at Córdoba. These Berbers, headed by Terek, then turned against their ally, and with the help of the Jews in the city made themselves masters of Seville, only to be themselves evicted shortly afterwards by the Arabs, who had recently conquered them and converted them to Mohammedanism in Africa. Legend explains the arrival of the Moors by the story of Roderic's seduction of Caba, daughter of one of his nobles, Count Julian, Governor of Ceuta, who, it is said, to avenge his daughter called in the Moors to his aid.

**Moorish Domination and Reconquest, 711-1492.**—At all events, the Moors entered Spain by the southern route, and, the social and religious organisation having completely broken down, the advance of the disciplined Moors was scarcely obstructed, so that in 718 they had actually crossed the Pyrenees, and a final check to their northern progress was not administered until

they were met in 732 at Tours by the Franks under Charles Martel

The diversity of race among the Moors led to constant quarrels, though a revival was brought about in 755 by Abdur-Rahman, who established a Caliphate at Cordova

However, the Moors, habituated to a dry land, could flourish on the Meseta, but they never succeeded in rising superior to different natural conditions, and, accordingly, never penetrated the mountains and forests of the north, where the climate is temperate and the mountain life was one with which they could not cope. The Basques never gave in to them, and it was among the Cantabrian Mountains that the new Christian source of resistance was to arise, which, after seven centuries of occupation, was to drive the Moors from Spain

The formation of the country offered the opportunity to the more enterprising rulers among the Moors to set up princedoms of their own, and this was made the easier because the Moors were an amalgamation of several races, but loosely held together by allegiance to a common religion. Thus we find the Moorish power being gradually divided into separate units at Seville, Cordova, Valencia, Toledo, Granada. Their common worship was an incentive to combination to the broken Christian forces, who had been gradually recovering their strength in the seclusion of the mountains

But for the common inspiration of religion and the disunion arising among the enemy thanks to the structure of the country, the rivalries between the Catholic kingdoms, again due to the structure of the country, would have prevented this crusade against Mohammedanism being brought to a successful conclusion. As it was, much of the Moorish empire was won back to Catholicism by the individual efforts of Catholic princes, seeking self-aggrandisement. Cataluña was won from the Moors by the Franks, when taking the offensive south of the Pyrenees. This country, surrounding Barcelona, existed independently in the ninth century

Christian kingdoms gradually emerged, first Leon, with Castile dependent on her till 932 then Galicia and Navarre

From Navarre in the eleventh century the kingdom of Aragon took its birth. Navarre, Castile, Leon, and Galicia were occasionally united under one king, at which time the hopes of Christendom were in the ascendant, but the tendency of the king to divide his kingdom up among his sons prevented a permanent union for a long time. The Catholic kingdoms gradually became two—Castile and Aragon—and the marriage in 1469 of Ferdinand, heir to Aragon, and Isabel, heiress to Castile, consummated the unity required to evict the Mohammedan. Meanwhile the differences between lowlanders and highlanders were asserting themselves, and national unity was sooner come by in the lowlands of Portugal. These efforts were headed by Alfonso Henriques, who died in 1185. Having broken away from Leon, a united effort against the infidel, fostered by the formation of the Cortes or Parliament, led to the extermination of the Moors from the country by 1279.

**Effects of Moorish Occupation.**—Thanks to the Moorish methods of irrigation and their superior knowledge of cultivation, they had brought many barren lands into fertile farms. They introduced the sugar-cane into Europe, as well as cotton, and they improved the breed of live stock. They became the weavers of the country, and on their expulsion Spain suffered a severe economic disaster by losing the productive elements from the population.

Their architecture, of which so numerous examples remain, has had a lasting effect upon Spanish work, and in the centre of the peninsula it vies with the Gothic art which spread from the north. Moorish architecture may be perhaps described as an attempt to portray nature in stone, and a harmony of strength, spaciousness, and detail is the result, with the effect of repose. Not being allowed to portray the human form by their religion, they sought to represent the lines of nature as they saw them in the desert, and the principle of columns and arches is derived from the tents of their encampments. The insides of their tents were hung with the beautiful tapestries of their weavers, and the brilliant colours, which artistically enliven the dullness of the desert and have thus become characteristic of Eastern

æsthetic taste, were reproduced in the ceramic art. The Moorish mind, long habituated to contemplation in the desert, sought repose, and thus the Moor found in the inner courts of his house or palace. It is significant that the outsides were left unadorned. The Moorish striving after nature was invaluable as an antidote to the artificiality of the later Renaissance.

It might be expected that the Christian struggle, continued through generations, against a foreign infidel would have given birth to a feeling of nationality in Spain as it did in Portugal, but the fact is that the disintegrating forces of the structure preserved a local patriotism, and the struggle was rather a crusade on behalf of the Church than a national movement in defence of country. Thus it was that the territory, recovered from the Moors, became the property of the Church, and as its administration became necessary the power of government was in the hands of the Church rather than of the State. The removal of the hereditary yoke did, however, lead to a period both in Spain and Portugal of expansion and enlightenment, revealed by an outburst of literature and art.

Modern civilisation owes much to the Moorish occupation. In the eighth century, when most of Europe was in the "dark ages," Cordova was a centre of art and science, and students came there from all parts. The words algebra and alchemy (the Arabic *al* = the) prove the source of these sciences. Astronomy too had been widely studied by these men of the desert. Their influence on other countries may be shown by the fact that Shakespeare wrote a play about a Moorish prince, Othello, besides introducing another as suitor to Portia, and Corneille took the Cid as hero of one of his plays. The Cid, with his sword Tisona and his charger Baviaca, was a character, partly historical, partly legendary, who appeared as the champion against the Moors. His real name was Rodrigo Díaz, and he was born in 1026 at Bivar, a village near Burgos, in the cathedral of which his memorial is still shown. It may be noted too that Seville is the scene of several famous operas, the *Carmen* of Bizet, *Don Juan* and *Figaro* of Mozart, the *Barber of Seville* of Rossini.



The world at large is more indebted to the crusading spirit engendered by the Moorish occupation than it usually recognises. It is probable that the primary motive in seeking new lands was the crusade against the infidel.

**Period of Expansion.**—The Portuguese, being the first to free themselves from the Moorish occupation, and being by their geographical position turned to the sea, were, therefore, in the van of exploration. Having gained their own independence, they were ready to carry a crusade into the enemy's country, and it was not long before an occupation was made of "Algarve over the sea" in Africa. Expression was given to these ideals by Henry the Navigator, whose enmity to Islam suggested to him an alliance with Prester John, the King of Abyssinia, who was himself maintaining Christianity against the Turks. To effect this alliance, Henry hoped to sail up the mythical western Nile, supposed to flow into the Atlantic, and to discover its mouth he encouraged constant coasting voyages during the fifteenth century. This continuous contact with Arabs exposed the source of their wealth, the trade with the East. Portuguese exploration took the form of capturing this trade and forming commercial contact with the Indies by the African route. The rounding of the Cape by Vasco da Gama in 1497, and his discovery of the shortest route to the Indies, was the culmination of this policy, and trade was ever afterwards the motive of Portuguese exploration. This epoch-making event was commemorated by the founding at Belem, in Lisbon, of a Hieronymite monastery, the architecture of which shows the blending of Renaissance work with the Oriental, a fitting memorial of the union of eastern and western culture, which da Gama's voyage foretold.

Behind the Spanish expansion was also the crusading spirit : the habit of fighting against Islam prompted them to indulge it abroad by exterminating the infidel everywhere, but compared with the Portuguese they were a continental race and so did not naturally embark upon the sea. In fact, it is significant that their first maritime enterprise was commanded by a Genoese. Columbus in 1492 coasted down Africa, and then by the help of the trade winds sought the Indies, as a source of wealth, by



a westward route, on the theory that the world was round. Thus he discovered the West Indies, and subsequent Spanish voyages were made to South America, where gold and silver were discovered. Spanish exploration differed in principle from Portuguese, for they were in search of wealth in precious minerals in a new world, while the Portuguese were aiming at acquiring a trade already in existence. For this purpose Cortés conquered Mexico in 1519-21 for Spain, and Pizarro won Peru in 1531-41.

Rivalry between Portugal and Spain for colonial possession, though controlled by papal bulls and a Treaty of Tordesillas in 1494, became hotter, and their claim to the whole New World was not acceptable to other nations. In 1580 a war broke out, leading to the annexation of Portugal to Spain for sixty years.

**Modern History.**—The accession of a Hapsburg in 1516 to the Spanish throne brought Spain inevitably into the vortex of European politics. This king, later known as the Emperor Charles V, made Spain the champion of Catholicism, and his son Philip II began an ecclesiastical tyranny, which even a rise of nationalism has not been strong enough to overcome. The Inquisition had been introduced into Spain by Isabel, and its force was to be felt in the Spanish colonies as well. For a time, however, Spain was busily enlarging and consolidating an empire, and this period of growth and expansion gave birth to a golden age of literature and art.

Cervantes (1547-1616) produced the greatest romance of his times, *Don Quixote*, while Lope de Vega and Calderon excelled in drama. Valasquez, Murillo, and Ribera are the most famous among the names of painters.

In Portugal, Camoens (1524-80) excelled in lyrics and wrote a national epic, *The Lusiads*. Dramatists are represented by Gil Vicente. Scientific research was attempted by a Viceroy of India, de Castro by name, who has left us a diary he made on a voyage through the Red Sea, while García da Orta studied drugs in the East. A distinctive school of painting arose about the same time under Vasco Fernandes of Vizeu.

After this a period of decay begins. Ecclesiastical tyrants were

not fitted to administer a world empire, and the fight for national independence, the rise of democratic sentiments, the opposition to intolerant religions, gradually broke up the Spanish empire. Quarrels between Church and State have weakened the country ever since. After Spain's entry into European politics she became a modern state, but it was not until the peninsula had been invaded by the modern state of France under Napoleon that anything like an enduring patriotism showed itself among the people, and even then the patriotism was of a local nature. This led to anti-clerical feelings, which reached a climax in 1836 when religious congregations were expelled, but reaction re-appeared in 1851 when certain orders were allowed to return, since when their social and political influence has increased. As in the case of the Irish, the Roman Church has retained its hold upon the peasantry by discouraging its enlightenment, and even to-day nearly one-half of the population is illiterate, while the remaining half is educated equally by the Church and the State. The conflict between Church and State continues over education, the former desiring to maintain their own institutions without religious tolerance, and so insisting on uniform textbooks, but the State holds a monopoly in educational matters in that all schools must accept their examinations, and so to some extent the religious communities find themselves under the thumb of the anti-clerical party.

**Colonisation.**—By the Treaty of Tordesillas in 1494, the world was divided between Spain and Portugal by a line, which gave Mexico and Peru to Spain and Brazil and the west coast of Africa to Portugal. The Spaniards occupied new lands with a view to obtaining gold, and never sought to develop the real wealth of their colonies by agriculture. They came as conquerors, partly in the spirit of crusaders, and they imposed upon the New World the same social system and form of government under which they had been brought up. Development of the colony's resources was, therefore, retarded, and trade even with the home country was limited by jealousies among the ruling classes of Spain, who laid a series of restrictions on movements between the two. The nobility were socially degraded

if they were occupied in trade or industry, and therefore flocked to towns and led useless lives. Social distinctions became more marked, as generations of mixed Spanish and Indian blood grew up, and it is to be noted that the connection between races in very different stages of civilisation does not tend generally to satisfactory results. Possibly climatic conditions promoted moral deterioration; at all events, the Spaniards failed to develop the power of administration, and the door was not opened to the knock of democracy at the end of the eighteenth century, and when Canning "called the New World into existence to redress the balance of the Old" in 1822, the Spanish-American colonies gained their independence. The inability of the Spaniard to govern democratically, and the fact that Spain is continental, not maritime (i.e. she never took naturally to the sea—the Armada was really composed of soldiers put on board ship), have lost her possessions over sea, and to-day she retains Rio de Oro, Spanish Guinea, a few small islands in the Gulf of Guinea, and a zone in Morocco. It is significant that her more maritime possessions, the islands in the Pacific and the West Indies, were lost in 1898, so soon as the most advanced democracy with potential naval force made its influence felt.

The Portuguese are maritime by nature, and, like the Phœnicians of old and the Arabs whom they displaced, their movement upon the face of the waters has been incited by trade. Their settlements have, therefore, been only on the coasts. Their first endeavour was to find the shortest route to India, and so they gradually discovered, and to some extent occupied, the western and south-eastern shores of Africa. Having established trade factories in India, they expanded their commerce in China and the East Indies. So occupied was their attention with this Indian trade that it was some time before they took much notice of their claim to Brazil. Then the suitability of Brazil to the sugar-cane was discovered, and this led to a brisk trade, coupled with slaves brought from the shores of Africa. Portugal has never seriously attempted to make a settlement inland of the shores she has occupied, and her remaining possessions show that. In Africa, she holds the Cape Verde Islands, St. Thomas,

and Princes Islands, Portuguese Guinea, Angola, Mozambique. The interiors are still largely in native hands. In India, she retains the towns of Goa, Daman, and Diu, in China Macao, and in the Eastern Archipelago she has part of the island of Timor.

Maladministration at home has lost Portugal her sea empire. Home industries have not been developed, with the result that there is little demand from Portugal herself for the raw materials her colonies can send her, and thus other countries, such as Great Britain and Germany, have acquired a commercial standing in them. The rivalry of the Dutch first weakened Portuguese power on the sea, as both sought the carrying work of the world, and Great Britain completed the destruction, thanks to her superior resources, won by her defeat of France in the eighteenth century.

Although Portugal recognised the political independence of Brazil in 1825, their social and commercial relations remain the same. Portugal annually sends some 60,000 emigrants to settle in Brazil, but Great Britain, France, Germany, and the United States are ousting Portugal, as their demand for Brazil's tropical products is much greater, owing to Portugal's economic decadence. It must be remembered that, at the beginning of the nineteenth century, when Napoleon descended upon Portugal, the Court decamped to Brazil, and for a time Rio de Janeiro was the capital of the Portuguese Empire.

T T

## CHAPTER VI

### THE RHINE VALLEY

**Structure.**—In times geologically ancient, when Scotland and Scandinavia were still connected by dry land, the area now drained by the Middle Rhine lay below the sea, and various deposits of marine organisms then scattered over the floor have since become limestone and chalk.

At one time the sea here was very shallow and a jungle grew up, only to sink again and to become carbonised into coal. At the end of this era in Miocene times a vast uplift, roughly running east and west, occurred of the earth's crust, and formed the dome, now represented by the Vosges and the Black Forest (S c h w a r z w a l d)

Mountains. Violent earth movements fol-

lowed from the south, crumpling the southern part of Europe into the Alps and causing a crack across the ancient dome. The summit faulted in two parallel lines, and the block between, some twenty miles wide, sank, forming a rift valley

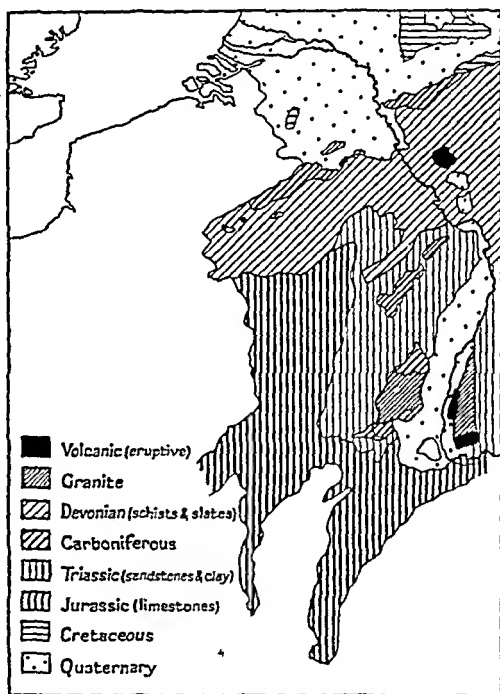


FIG. 57.—SIMPLIFIED GEOLOGICAL MAP OF THE  
RHINE VALLEY.

from Basle to Mainz. A summit of the ancient dome still stands up a thousand feet above the floor of the valley of volcanic rock, the Kaiserstuhl, uncovered by the deposits which have since been laid down. Meanwhile, the land to the south was slowly rising, and the sea which filled the valleys became shallow and left a series of lagoons. Near Mulhouse gypsum deposits have been left after evaporation of the water. As the north was sinking at the same time, a series of clays and sandstones became deposited around Mainz.

During the Ice Ages which followed, a sheet of ice spread as far south as the Elbe, while lesser sheets extended from the Alps, the Vosges, and the Black Forest into the valleys. Glacial

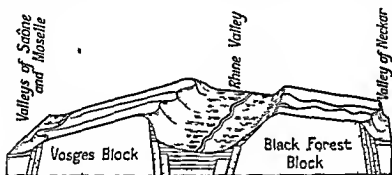


FIG 38 —BLOCK DIAGRAM SHOWING THE STRUCTURE OF THE RHINE VALLEY  
The section is taken across the valley near Colmar and shows the valley as a rift between two blocks

valleys were then scooped out of the ancient plateau, and streams emanating from the glaciers carried gravels down into the rift valley and deposited beds there. When the ice receded, the rift valley was tilted to the south, and the water drained southward by way of the modern Doubs valley and so to the Rhone. This gap in the mountain system is still marked by the Burgundy Gate or Trouée de Belfort. On the north face of the dome, a river flowing towards Cologne was cutting back into the harder rock, and when subsequently the rift valley sank towards the north its waters changed direction and fell into the gorge, cut by the Cologne stream and now extending from Bingen to Bonn. The nucleus of the dome is granite, and to day may be seen rising above red sandstones and forming the greater heights.



**Relief.**—The modern Rhine owes its origin to a series of mountain streams rising in the Swiss Alps, and two main head streams vie with one another for the honour of being its source. Of these the Vorder Rhine flows first from a glacier on the St. Gotthard, only some twelve miles from the source of the Rhone, and takes its course down a longitudinal valley in a north-easterly direction. At Reichenau it is joined by the Hinter Rhine, which descends from the Splügen. The combined waters then rush on in a more northerly direction in a mountain torrent with a heavy erosion of its bed, and so the Rhine enters Lake Constance. On the floor of the lake the heavily sedimented river drops its load, owing to the slackening of the stream in the still water of the lake, and leaves the lake a clear stream.

It now continues its course in a westerly direction, and where harder rocks cross its bed at Schaffhausen the river hurls itself down 70 feet. Farther on, at Coblenz, it receives the River Aar, which has flowed through the Lakes of Brienz and Thun, and brings more water to the main stream than it has itself. Thence the river enters the rift

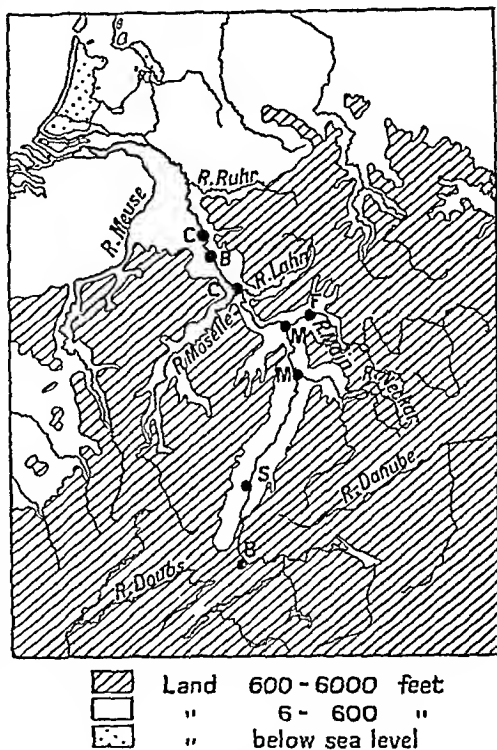


FIG. 59.—SIMPLIFIED PHYSICAL MAP OF THE RHINE VALLEY.

Note the proximity of the headwaters of the Rhine, Danube, and Doubs, and the consequent use of the valleys of those rivers for purposes of communication.

valley at Basle, where the river level is 870 feet above sea-level

The Vosges and the Black Forest rise steeply on either flank to plateaux 4,000-5,000 feet high. The Black Forest from Basle to the valley of the Kinzig, flowing towards Strasbourg, presents a granitic edge. From this valley northward to Baden the plateau edge is lower and is covered with sandstone. From here to Heidelberg it is at its lowest and is of limestone. To the north and east of Heidelberg the granitic plateau rises again, in a region known as the Odenwald.

Through the Odenwald two important tributaries, the Neckar and the Main, have cut gorges, joining the main stream at Mannheim and Mainz respectively. About the latter town the Taunus Mountains have blocked the passage of the river, and the channel takes a right-angled turn to the west and then at Bingen enters the gorge running in a northerly direction. The schistose plateau in which the gorge is incised is cut into on the left bank by the Moselle gorge, entering the main valley at Coblenz. South of the Moselle the plateau rises to a ridge known as the Hunsrück, and north of the Moselle lies the volcanic region of Eifel, similar to the Auvergne, with its volcanic cones and crater lakes, or *maare*. These cones have been formed by explosions and consist of fragments of Devonian rocks, through which volcanic matter has passed. The walls of the crater are thus impermeable, unlike those built of volcanic ash, and hold the water, supplied by rain, and so the lakes, such as the Laachen See, have been formed.

On the right bank the tributary the Lahn, joining the main stream at Lahnstein, divides the plateau into the Taunus on the south and the Westerwald on the north.

At Nieuwied the volcanic formation of the mountains is shown by pumice, at Andernach by the columnar basalt, and at Remagen by the famous springs of Apollinaris.

At Bonn the gorge opens gradually into a wide alluvial plain, which is part of the great plain of Northern Europe. The deltaic-termination of the Rhine is the present state of the lowland formation, which, once deltaic, has now become an alluvial

plain, just as the Euphrates, which has formed Mesopotamia, is still pressing its delta farther and farther into the Persian Gulf, leaving a wide alluvial plain behind.

From Bonn the plain widens rapidly, first in a gulf of lowland, commanded by Cologne. The surface is undulating, rising on the right bank to the foot-hills of the northern part of the schistose plateau, known as Sauerland. From its northern edge dip the coal measures of the Westphalian coalfield, which are exposed in the valley of the Ruhr, which, rising in the Sauerland, cuts its course through the hills to join the Rhine near Duisburg. With the coal measures are large deposits of iron-ore. Lower down, the main river is joined by the Lippe, which, rising in the Sauerland, takes a course parallel to the Ruhr but across the plain.

Soon after entering Dutch territory the Rhine bifurcates into the Waal and the Canal of Pansterdam. This is the beginning of the delta: the surrounding country is below sea-level, the alluvial deposits of ages. As in all deltas, the channels tend to move their courses, and the Rhine mouths in historic times have moved westward and southward.

Climate.—The climate of the middle Rhine region marks the transition between the maritime effects of Western Europe and the continental effects of Eastern Europe. Lying low as the rift valley does, and bounded on both sides by high plateaux, it is separated from the maritime influences, modifying temperature and bringing moisture on the westerly winds, by the Vosges, and it is separated from the extremes of temperature, which mark the eastern part of the continent, by the altitude of the Black Forest. As Germany as a whole gradually rises in height towards the south, the rise in temperature, caused by lower latitude, is correspondingly counterbalanced by the fall of temperature, caused by altitude, and thus, roughly speaking, the temperature of Germany is nearly constant, but the comparative level of the Rhine valley causes the temperature to be higher than in other parts. It is the only part of Germany which has seven months with a mean monthly temperature over 50° F. and one of over 68° F. Probably the dark sides of the mountains on either side cause slow radiation, and thus the summers are hot,

while the winters are mild. The warm air, brought by the westerlies to raise the temperature of the western-continent, rises on the western slopes of the Vosges, and so cools and thus loses its effect in the valley, but the valley is not so distant from the Atlantic that the extremes in summer heating and winter cooling of the land are marked as they are farther towards the east.

A comparison of the following figures will elucidate the facts.

	Lat.	Altitude	January mean temp	July mean temp
Frankfurt on Main	50°	344 ft	32° F	67° F
Basle	47°	918 ft	32° F	66° F
Friedrichshafen	48°	1 312 ft	31° F	66½° F
Brussels	50°	328 ft.	34° F	63° F
Plymouth	50°	13 ft	42° F	61° F
Debreczen	47°	459 ft	25° F	71° F
Bucharest	44°	279 ft	25° F	75° F

The cyclones, which pass from the Atlantic and are the main influences of Western European weather, take their course across land by the lowlands, or follow the edge of the high ground. The Middle Rhine, therefore, escapes the attention of the cyclones, which pass eastward over the North German Plain.

The valley is normally sheltered from rain, when the prevailing winds are from the south-west, and in winter the valley between Basle and Strasbourg receives on the average less than 5 inches. When in summer a high pressure is established in the North Atlantic, and the direction of the wind is from the north-west, the Rhine has a higher condensation, and so the rainfall is rather higher in summer than in winter. Thus in rainfall the Middle Rhine approximates to the climate of Eastern Europe, while in temperature it approximates more closely to that of the west.

**Vegetation.**—The remains of the forest natural to these latitudes are still to be seen, especially on the mountain slopes, but the greater part of the forest in the lower altitudes has long since been cleared for agriculture. The type of tree is generally

decided by the soil; thus the silver fir is most characteristic of the Black Forest, while the limestone region of the Spessart is famous for its oaks and beeches. On the floor of the rift valley two comparatively sterile strips of gravel and sand run alongside the channel and these are covered with forest. Outside these strips the ground is slightly lower and moister, and is covered with meadow. Outside the meadow lands is fertility, shown by the orchards, maize, hops, and tobacco of agriculture. The lower slopes are covered by vineyards; the higher slopes with pines. Above these, where altitude makes the climate more rigorous, the forest gives way to pasture of the highland type.

The forests are infested with badgers, wild cats, wild boars, and martens, and even wolves are still to be found, notably in the Ardennes.

Agriculture.—The warm climate enables the vine to be brought to prolific maturity, and vineyards cover the lower slopes of the mountains on either side of the river in terraces. The general term of hock is applied to these wines, but the varieties are produced by differences of soil and grape, but more especially by the different methods of treatment. Mainz is the centre of the industry. Vine culture extends up the valleys of the chief tributaries, notably the Main and Neckar on the right bank, where the higher valleys have a particularly suitable soil, formed from disintegrating limestone. The Moselle is the home of many famous brands of wine, Piesport, Brauneberg, Berncastel, Graach, Zettingen.

The warmer climate and richer soil of the rift valley allows wheat and barley to predominate over the rye and oats of other parts of Germany, though as soon as the northern end of the gorge opens on to the plain rye again becomes the prevailing cereal.

Hops and tobacco are grown in the rift valley, as well as the upper part of the Main, where Nürnberg is the centre.

Industries.—Since the middle of the nineteenth century, there has been a rapid increase of industrial life, causing a continuous migration of the population from the agricultural areas to the towns. The location of modern industries is regulated

by the position of the motive power, required for manufacture, and thus it is round coalfields that we look for industrial areas to rise. In the Middle Rhine region, there are two main coalfields, the Saar and the Ruhr, which have in consequence figured so largely in continental politics since 1918. In 1914, the Saar coalfield had an annual yield of about 17½ million tons, and lies to the south of the Hunsrück. It is part of the Lorraine coalfield,

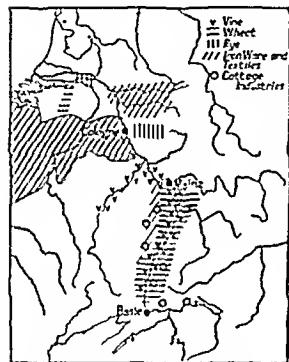


FIG. 66.—ECONOMIC PRODUCTS AND INDUSTRIES OF THE RHINE VALLEY

upon which Nancy depends for her lace-making, textiles, and iron-goods. Strasbourg, Colmar, and Mulhouse specialise in cottons, the last making use, too, of the power derived from her hill waterfalls.

The coalfield, which is pierced by the Ruhr, has given rise to an enormous "Black Country" on both its sides. As in the Lorraine coalfield, iron-ore is mined in the same area, and the easy and cheap transport

for heavy goods afforded by the river has facilitated the extension of this industrial district. Small villages have rapidly become towns, and these towns have expanded to such an extent that many of them have joined together. Essen, the seat of Krupp's works, is the centre of the steel and iron industry, while Remscheid and Solingen, in medieval times noted for its sword-blades, now specialise in cutlery. On the hill pastures round Elberfeld and Barmen, now united in

one town, five miles in length, used to be raised the sheep to produce the wool, which was woven in the villages. Now the advent of steam works has led to weaving on a larger scale, and the inherited skill in weaving and spinning has been extended as well to cotton. Krefeld applies its attention particularly to silk manufactures, and in all cases the excellence of the water for dyeing and bleaching has played its part in localising these

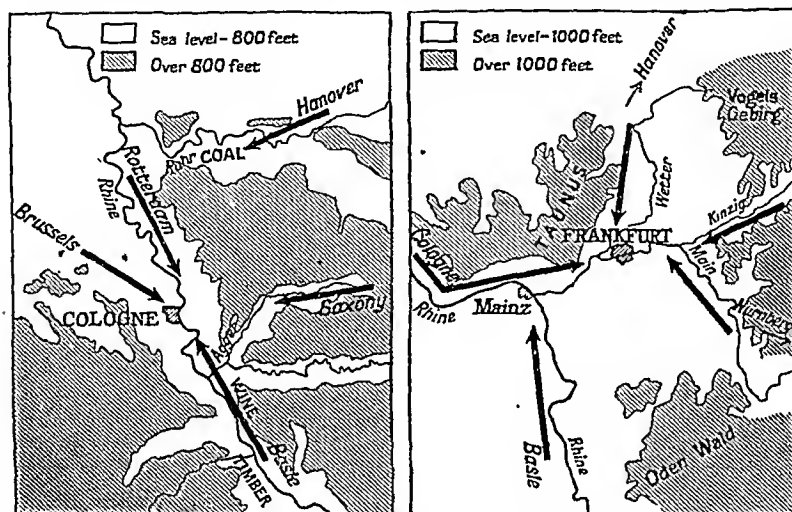


FIG. 61.—GEOGRAPHICAL FACTORS INFLUENCING THE GROWTH OF FRANKFURT AND COLOGNE.

Cologne is a bridge town on the main east and west route between Antwerp and Central Germany.

It lies at the junction of this route with the highway down the Rhine Valley.

Frankfurt, besides being the centre of a productive valley, lies near the junction of the Main and its tributary the Nidda. Above all it is the focus of routes from the valleys of the Rhone, Danube, Elbe, and Weser, and from the Lower Rhine.

particular industries. Duisburg, Düsseldorf, and Cologne are all the outlets of this vast industrial district and act as the river ports to the outer world. Ancient towns, fallen into decay, they have risen to a new magnitude to serve the industrial age. Duisburg, the birthplace of Gerard Mercator, who gave his name to the projection, now makes the steam tugs and the vast barges employed on the Rhine transport. It exports coal up and down the river, receives timber from the upper river forests and wheat from abroad. Cologne is the head of steam traffic.

Mannheim, situated at the confluence of the Neckar, is the natural head of Rhine navigation, and it is the entrepôt for grain, coal, and petroleum from down-stream, timber and salt from the Neckar, while it manufactures machinery, glass, earthenware, woollens, tobacco, and chemicals, drawing its raw materials from the surrounding country

Mainz, at the confluence of the Main, makes furniture from the timber forests and leather from local live stock, and has a large railway works for building rolling stock. It trades too in wine, grain and timber. In the Upper Main is Nurnberg, famous for its toy-making industry, the products of skilled workmen living in an infertile area, where wood is cheap.

In the Black Forest, industries, dependent on skill rather than the proximity of materials, have grown up, as in the Swiss Alps, to fill up the spare time of agriculturists, and such articles as clocks, watches and brushes are made. Pforzheim is notable for making cheap jewellery, as a result of French refugees settling there. Much of the skill shown in these pursuits may be traced to the Huguenots, who fled over the French border about the time of the rescinding of the Edict of Nantes in 1685.

**Communications**—When the highlands were upheaved in South-western Europe, a rigid obstacle was established between north and south and between west and east. But for the rift north and south and the contemporaneous cracks east and west, intercommunication would have been still longer delayed. As it was, movement in its simplest form by water was early organised by way of the rift valley. But human needs are not satisfied with communication only north and south—in fact, the tendency for migrating tribes to keep to the same climate to which they have been habituated causes migrations to move as a rule in a westerly direction. Certain outlets in both walls of the rift valley have allowed entry into the natural passage, watered by the Rhine, and consequently the Rhine has been, and is, the basic factor in all movement in Western Europe.

The west wall of the valley is broken between the greater heights of the Jura and the Vosges by a high and broad gap, known as the Burgundian Gate. From the western slope of



this cut flows the River Doubs, which cuts a valley till it reaches the Saône. By this means access is obtained to the Rhone valley and so to the Mediterranean and in a northerly direction to Dijon, whence the Paris plain is reached. Belfort stands at the top of the gap.

The northern end of the Vosges, where the general height is somewhat less, is pierced by a pass at the Col de Saverne, 1,325 feet high. By way of Nancy in the Moselle valley the plain of France can be approached. The Moselle itself, though it pierces the plateau, has too sinuous a course in the gorge before it reaches Coblenz, and this route is not, therefore, so valuable as might be expected. The Upper Moselle can also be approached by way of the Nahe valley, which reaches the Rhine at Bingen, and thus Metz and Trier are connected with Mainz. This route marks the lower ground between the Hardt Mountains and Hunsrück.

The plateau has no other accessible routes, but north of it communication is simple across the lowland plain, and the traffic of Antwerp by Maastricht and of Liège passing through Aix-la-Chapelle enters the Rhine at Cologne.

From the east, communication with the Danube is effected from Ulm by way of the valley of the Fils, a tributary of the Neckar, and thus to Stuttgart. Thence a passage is made to Karlsruhe by the Pforzheim Pass, or else it continues down the Neckar to Heidelberg, the medieval and modern university town, and so to the Rhine at Mannheim. A road over the plateau joins Ulm to Augsburg, to which the main routes from Vienna and from Venice unite.

The Danube basin is further connected with the Rhine by a route from Regensburg to Nürnberg across the Jura. Making use of the valley of the Requitiz and then that of the Main, Mainz is readily reached by Wurzburg and Frankfurt.

The Lahn, which joins the Rhine a little above Coblenz, opens the way between the Taunus and the Waterwald to Hanover by way of Cassel.

Where natural lines of communication have crossed one another, there have grown marts, which have risen to great cities. To such a joining of routes Frankfurt may be said to

owe its position <sup>to its</sup> warm climate with a sufficient rainfall and a fertile soil have added to the geniality of its surroundings, and have helped to support a large population. Frankfurt lies some twenty miles up the Main from Mainz, and commands the plain, which here extends from the Rhine to the east. Routes over otherwise impassable highlands converge from all directions, to the north stretches the fertile valley, the Wetterau, between the Vogelsgebirge and the Taunus. north-east entry is made from Hanover through Fulda down the valley of the Kinzig south-east the Jura is crossed from Regensburg by Nürnberg and Würzburg south and west the routes of the main valley of the Rhine turn towards Frankfurt. This nodality has made it a convenient centre from which banking may be pursued for the merchants collecting from all sides.

Basle takes its position from the point where a mountain river enters its plain track. it is thus the highest point to which boat traffic can be brought, and, therefore, here there must be a transfer of means of transport by water and by land. It stands in the way of the great west-east road, entering by the Burgundian Gate, and commands the way up the Rhine to Lake Constance. The Jura is here lower, and so several hillways are to be found joining Basle to Zurich, Lucerne and Berne.

As Basle rises in the plain opposite the Burgundian Gap, so Strasbourg rises opposite the opening of the Saverne Gap. The valley of the Bruche opens another way into the Vosges and that of the Kinzig into the Black Forest on the opposite side. The town is placed away from the left bank of the Rhine, as its banks are here low.

Similarly, at the north end of the gorge, where the valley opens into the north European plain, Cologne has risen, the entrance for all the merchants of the plain into the interior of the continent.

All the large cities in the rift valley mark the point on the great north south road, at which a valley opens from east or west, as Freiburg, Karlsruhe, Darmstadt.

Such are the natural routes and communications, rendered by the configuration of the earth's crust, but Man, in his aim at progress, civilises Nature, and to these natural routes he has

added speed of movement, sometimes by cutting canals and sometimes by laying railways. To-day a double track of lines runs down on either side of the Rhine, parallel to the old roads. Most of the old nodal towns have now become railway centres. Railway engineering demands a careful respect for gradient, and the chief trans-continental line, the Orient Express, enters the rift valley by the Saverne Pass at Strasbourg, runs down the

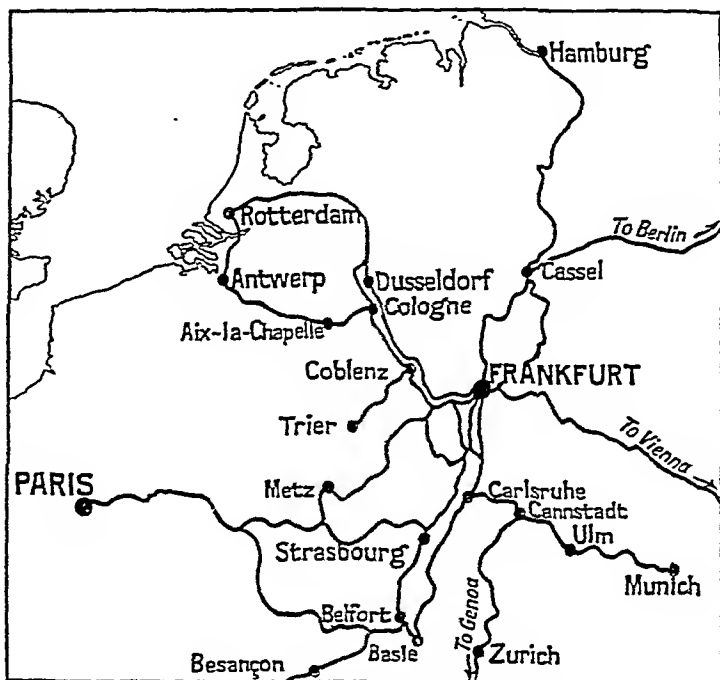


FIG. 62.—PRINCIPAL LINES OF RAILWAYS IN THE RHINE VALLEY.

valley to Karlsruhe, where it turns east to Stuttgart and thence to Ulm and Munich, whence the train continues to Constantinople. Another line from Paris takes the Burgundian Gap to Basle, through Belfort. Frankfurt makes use of all its lines of egress for railways to Cassel, Fulda, and Nürnberg, and is connected with all the lines passing up and down the rift valley. A line from Metz joins at Bingen, one from Trier at Coblenz, and one from Aix-la-Chapelle at Cologne.

The internationalisation of the Rhine waterway has led to an enlargement of the water systems of both France and Germany, and both countries have succeeded in making canal connection between their existing systems and the Rhine. Thus the Rhone is joined to the Rhine by a canal cut through the Burgundian Gap to Strasbourg, making use of the existing stream of the Ill. From Strasbourg a canal is taken to Basle and another northward to the Saar valley. By means of a tunnel the canal is taken over the Col de Saverne and so into France to join the Marne.

The Danube too has been joined by water to the Rhine by means of Ludwig's Canal. This canal, said to have been started by Charlemagne, has now been largely superseded by railways, but still by it the odd sight of barges passing over the tops of mountains may be seen. The canal is cut from Bamberg on the Main, takes the valley of the Regnitz past Nurnberg, and then the valley of the Altmuhl, a tributary of the Danube, which it joins at Kelheim.

**Race**—The Rhine region was in the earliest times known to anthropologists occupied by a brachycephalic race, the Alpine, of which one branch, the Alpo Carpathian, lived even in Neolithic times on the highlands of Central Europe, including the Vosges and Swabian Jura. Remains have, however, been found in the valleys of the Main and Saar, due, no doubt, to the migration of part of the Mediterranean race northward. The Alpine characteristics are brown or black hair, sallow skin, broad face, dark brown eyes, and medium stature. These are to be found in Bavaria and Baden to day.

At comparatively early date, a strong Nordic infusion was brought into the river basin from the lowlands of Germany, and this accounts for the tall stature, light hair, and blue eyes characteristic of the Franks. These are all of Teutonic blood, and for the most part conquered the Alpines in the Rhine valley.

The Teutons first appear in history when invading Italy at the end of the second century B.C. The Cimbri, who came with them, were the remains of the earlier race, who had established themselves at one time on the east of the Rhine. The Teutons were divided into a number of tribes, and during the first century

B.C. were pushing the earlier settlers westward or southward : thus the Helvetii were forced to leave Baden for Switzerland. Julius Cæsar made the Rhine the boundary of Gaul, and in his time Gaulish tribes were disposed, the Treveri in the Moselle valley, the Rauraci in the southern part of Alsace, and the Mediomatrici to the south of the Treveri ; between Strasbourg and Mainz lay the Tribocci, Nemetes, and Vangiones, while the Ubii were settled round Cologne. The Suevi, afterwards the Swabians, dwelt between the Vosges and the River Lech and along the Neckar.

About the middle of the third century the various Teutonic tribes had united in large confederations, of which the Allemanni occupied the Black Forest, the Franks the rift valley and the banks of the Main and the Moselle. These Franks were the *ripüarian* branch, and pressed down the Rhine valley as far as Cologne, which they captured in A.D. 400.

**History.**—The history of the Rhine may be said to describe the struggle between Man and Nature. Man has attempted to overrule a geographic law : he has tried to make a geographical mediator into a human barrier. Nature has grudgingly allowed him to make the attempt, and has battered him, till sorely discouraged he has learnt his lesson. Political boundaries have constantly been designated by rivers, but though, at first sight, they appear to have the advantage of showing on the ground a definite line, yet, even if they do not change their course, they do not form a human barrier, but are a means of communication. Moreover, as a valuable means of communication, neither side can ignore them, and rivalry for control soon comes again to the front. Yet politicians have always had a liking for this type of frontier. The Tweed divides England and Scotland, the Vaal the Orange Free State and the Transvaal, the Dniester (once the Pruth) Rumania and Russia. In proof of the essential geographical truth that a river unites, rather than divides, a people, we may cite the Nile, the Euphrates, the Hoang-Ho as the centralising force, which led to the early civilisations arising on their banks.

In earlier times, before engineering had attained its later

development, either in bridging or in artillery, a river, especially if broad or lying amid marshes, offered an obstacle, but the number of battles fought in history at river crossings suggests that the obstacle was never reckoned as insuperable. While moats were a defence to castles, rivers might reasonably be regarded as a protection to a territory. Napoleon showed a more enlightened geographic sense when he founded the new departments of France astride the rivers. Cæsar Augustus may be credited with being the author of the theory that the Rhine divides France and Germany. He, however, had more excuse than his successors. The Romans were essentially a land power, and their method of controlling their conquered territories was by building roads and so facilitating the rapid movement of troops to threatened points. Accustomed, therefore, to move on land and arriving at a broad river, they naturally regarded it as a barrier to their enemies as much as to themselves. Hence, they decided, in the first century A.D., on making the Rhine the moat against the Teutonic tribes, and thus we find the remains of their defences on the left bank, at Basle, Strasbourg, Mainz, Coblenz and Cologne. The inadequacy of their defence, however, afterwards dawned upon them, and at a later time they found it necessary to effect a salient in the enemy's country, and so they built an agger, the Pfahlgraben, from the Main to the Danube. It is significant that, as the Roman Empire decayed, the waterways again came into their own, and during the Middle Ages, the Roman roads being no longer kept up, communication depended upon the rivers.

Towards the end of the fifth century, the Franks, moving down the Main, crossed at Frankfurt (= the Frank ford), and invaded Northern Gaul, and very soon Frankish dominion extended from Brittany to the borders of Bohemia. Charlemagne, therefore, had an empire, in which the Rhine was the main artery of communication, and his capitals, Aix-la-Chapelle and Ingelheim, both lie so that they are easily accessible by this route.

In the sixth century, Irish missionaries, including St Columbanus, made use of the Rhine to penetrate the heart of the empire, and thus Christianity was established. Later organisa-

tion made Cologne, Trier, and Mainz the seats of the Archbishops, who regulated the German Church.

The position of the imperial and ecclesiastical centres emphasises the geographical control felt, but the assembly points of the Diets at different places suggests that the centre of control is to be found in a district, rather than at a definite town. Thus the lowland of the rift valley contains several towns of equal importance, but none of outstanding merit—Frankfurt, Speyer, Worms, Mainz. This

led to no particular site being selected for the capital of the empire, and a rivalry between those that had at one time or another been used. All commanded the same lines of communication; all had the same genial climate and a fertile soil, from which the city food supplies could be obtained. This area remained metropolitan when, after Charlemagne's death, the empire was divided in A.D. 843 into Carolingia and a German

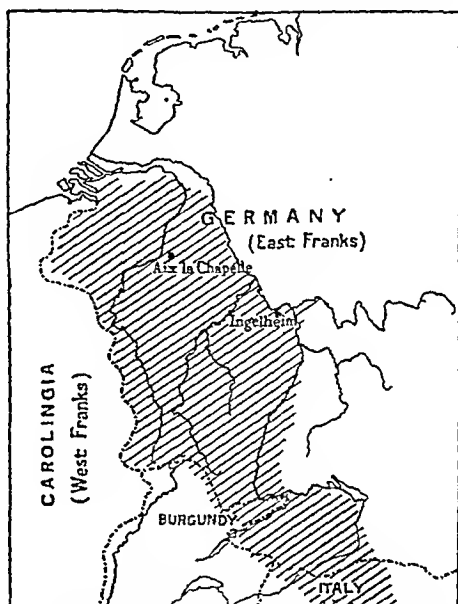


FIG. 63.—POLITICAL BOUNDARIES IN THE RHINE VALLEY IN 887.

kingdom, with a third kingdom, Lotharinga, a belt between the two. This third kingdom extended over the Alps into Italy, but such a barrier to control led to disruption very soon, and in 887 the divisions became Carolingia (France), Germany, Burgundy and Italy, the territory of Lotharinga (now become the basins of the Moselle and Meuse) passing to Germany. The division between France and Germany was thus some hundred miles west of the Rhine.

The tradition of ruling an empire south of the Alps proved

eventually the undoing of the emperor, and, though strong emperors, like Otto the Great (936-72) attempted it, his success was ephemeral, and while he was aiming at evading a geographical barrier, geographical conditions were proving their strength against him in his rear. The rocky spurs and peaks of the rift valley encouraged barons to build their castles on their impregnable heights, and the absence of the emperor on the

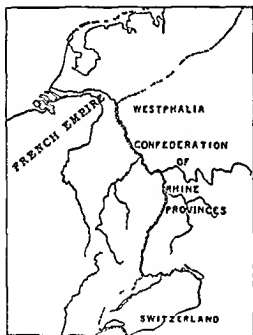


FIG. 64.—POLITICAL BOUNDARIES IN THE RHINE VALLEY IN 1812

south side of the Alpine barrier gave an opportunity to his feudal lords to aggrandise themselves at others' expense. When Barbarossa (Emperor 1152-90) was engaged in Italy on the same task, matters became worse, and a century of anarchy ensued, resulting from the intrigues of the pope with disaffected barons of the empire. The Ghibelline and Guelph factions were the outcome of this contest between emperor and pope.

In the seventeenth century, the building up of an immense French empire under Louis XIV led to a revival of the Roman theory of a river frontier, and again attempts were made to divide France from Germany by the Rhine. This may be seen by the French evacuation of Freiburg im Breisgau, on the right bank, and their retention of Strasbourg, on the left, at the Peace of Ryswick in 1697, though in 1678 Freiburg had been ceded to them by the Peace of Nijmegen.

This frontier policy of the Bourbon Monarchy was upheld by



the Revolutionary party, who, after the battle of Jemappes, marched up the Rhine and occupied Mainz. Napoleon continued this policy, but, with the geographical sense observed before, he realised that, if the Rhine were to be the frontier, France must hold the farther bank, and so he formed the kingdom of Westphalia for his brother Jerome and the Confederation of the Rhine Provinces, both on the eastern side. A reaction set in at the Vienna Congress, when the Confederation of the Rhine Provinces passed to Prussia, who, in 1870, secured Alsace and Lorraine on their farther bank, thus reverting to the principle of the Rhine valley being German. By the Treaty of Versailles, 1919, Alsace and Lorraine were returned to France, and a neutral zone on the right bank of the river was provided to prevent German aggression.

**Art and Literature.**—Life beside a river always leads to a contemplation of its waters. Its inevitableness must inform the mind: it looks back over the past: it looks forward to the future: all the joys and sorrows of mankind seem wrapt in its ever-moving waters. The Rhine has from earliest times been the subject of legend and romance. Its depth, its speed, its steep-sided cliffs, fill the onlooker with awe and a sense of mystery. Imagination quickly inhabits its valley and its rocks with ghosts and fairies, such as those told of by Brentano around the Lorelei. Its genial atmosphere and pleasant vegetation, its vineyards and its forests, have led to a happy temperament in the peasants. The echoes amid its ravines have trained their ears to an appreciation of song and music: no wonder that the Minnesingers sang of love and poetry. The ever-changing colours of their surroundings brought joy and fancy to their hearts. The Rhine became the setting of numerous legends, of which the Nibelungen Lied is the most famous, later to become the subject of Wagner's operas. Beethoven, too, was a native of Bonn, and expressed the poetry of his surroundings in melody.

Geographical conditions limit the materials, used for artistic expression: thus the forests have localised wood-carving: the sandstones of Cologne glass-work. Isolation in forest areas has led to village crafts, in which individualism has notably

developed, as may be seen in the national costumes, rich in colour and embroidery. The zest for individuality has sometimes led to an over-elaboration, as, for instance, in the exaggerated head-dresses of the women of Baden, where hats weigh several pounds, owing to the large number of pompons with which they are decorated. This tendency to over-elaboration is noticeable in much of the sculpture on churches and other buildings, but here it is more likely to be accounted for by the hard-headed merchants of the Middle Ages, who, having amassed vast riches, desired to see a good show for their money when they built their churches. The practical, superimposed upon the artistic, characteristic of many of the cathedrals may be traced to the business instincts, fostered in a race whose commercial relations were so easily extended by the facilities of communication with the outer world. Cologne Cathedral furnishes an example of the love of ornamentation, with its buttresses which have no architectural value and are purely decorative.

The local stones of varying hues led to the churches being built to express an artistic contrast in colours. Thus in Cologne Cathedral the slate is contrasted with the limestone. At Limburg the dark quarry stone is contrasted with the light tufa, while brick arches are placed against the dark basalt. The colour scheme of nature has fastened on the imaginations of the mural painters and the makers of coloured glass windows. The shadows of the valley have taught the values of light and shade.

The eye, long trained to delight in the silhouette of rocky crags against the sky, has perhaps led to a desire to rear towers to cut the sky line. Certainly towers are a special feature of Rhenish buildings. the cathedral of Limburg has seven, that of Cologne has two groups.

Perhaps too we may see in the greatest star of German literature the product of Rhenish influences. Born at Frankfurt in 1749, Goethe lived the greater part of his life in the Rhine valley. Deriving his imaginative nature from his mother and out of sympathy with his father's commercial attitude to life, he found his content in Nature, so lavishly displayed before him. The dark and sombre valleys were the environment of his sterner,

sometimes a melancholy, outlook, while the birds, the insects, the flowers, the changing colours, developed the more joyous. Without this education of Nature, he would not have led the thought of his time back to Nature, and become a pioneer of the Romantic movement. In early life, he was in doubt as to whether to use Prometheus, or Cæsar, or Faust for the hero of his genius, but the Rhine was to provide him with his subject. The legend of Faust, who sold his soul to the Devil, is wholly Rhenish, being derived from the merchant of Mainz, who seized the printing blocks of Gutenberg in the fifteenth century, and turned out copies of the Bible with such speed that his contemporaries assured themselves that he must be in league with the Devil.

T. T.

## CHAPTER VII

### THE NETHERLANDS AND BELGIUM

Structure—Belgium and the Netherlands consist of three main geological elements. From a line passing approximately through Landrecies, Hirson, and Sedan, a much-worn plateau of Devonian Age stretches eastward across South Belgium, forming the Ardennes and north Luxemburg, and continues under various names, e.g. Hunsrück, Taunus, etc., into Germany. In the Hohe Venn district and round Rocroi are patches of Cambrian age which probably represent islands in the Devonian sea.

To the south of this ancient *massif* is a wide belt of Lias and Trias, which includes the Arlon district of Belgium and south Luxemburg. On the northern edge Carboniferous rocks are exposed on a long and relatively narrow front. In Belgium, these are highly fractured and contorted owing to the action of the great Ardennes overthrust, before passing under the Cretaceous and Tertiary beds which make up the Brussels basin, and now cover the old Anglo-Belgian plateau formerly occupying the triangle Mons, Liège, Antwerp. The headwaters of the Scheldt, Dendre, Senne, and Dyle rivers have cut down to the underlying Carboniferous rocks, so making possible the Tournai and Mons coalfields. The same general sequence of outcrop is observed to the east in Germany, though here the exposures are broader and less disturbed.

Between these two "ends," if they may be so termed, the rivers Maas and Rhine have cut through the old Devonian plateau on their way to the North Sea, and there results a large, roughly triangular gulf filled with Quaternary and alluvial deposits under which the older series lie buried. This gulf includes Holland, a strip of western Germany, and a similar strip of north-east Belgium. Trial borings have shown the presence

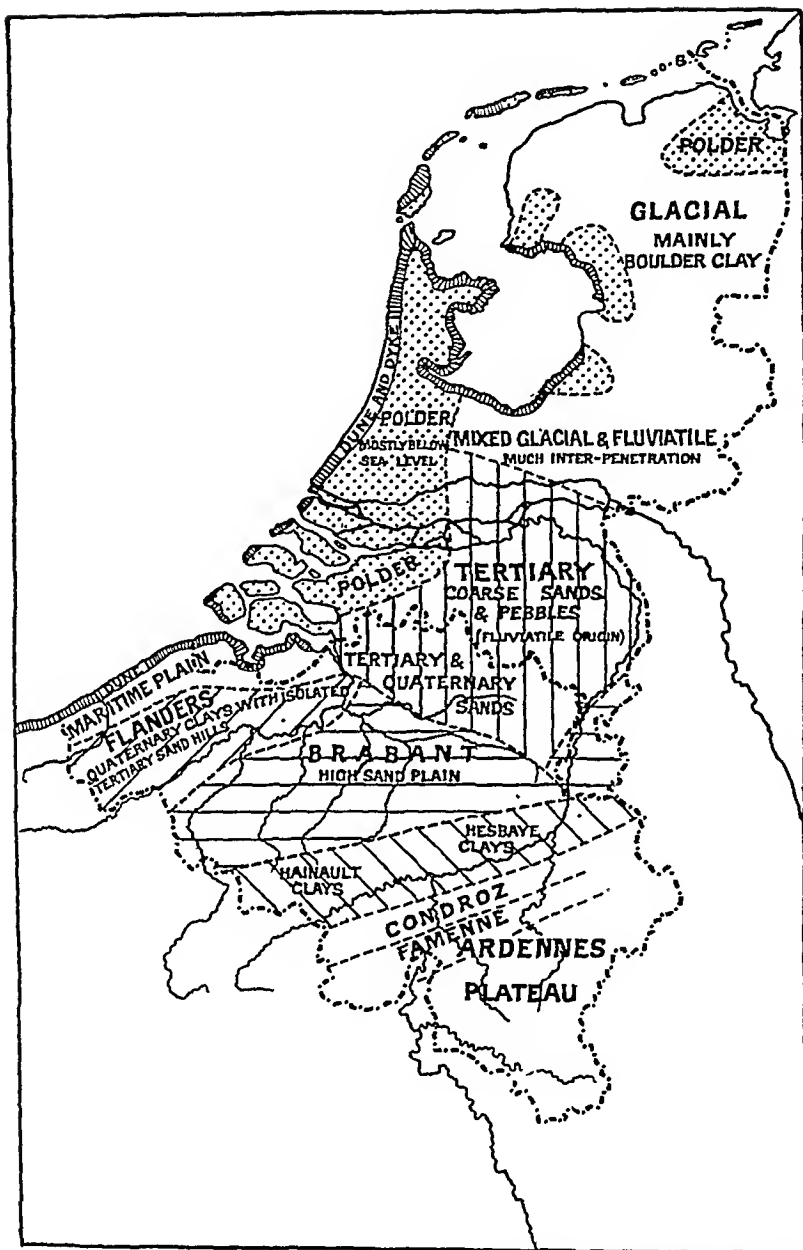


FIG. 65.—SIMPLIFIED GEOLOGICAL MAP OF THE NETHERLANDS AND BELGIUM.

of the faulted Carboniferous rocks at varying depths, and have led to the modern development of the Campine and south Limburg coalfields. During the Pleistocene, north Holland was overrun by the Scandinavian ice-sheet and now presents a typical morainal landscape.

**Relief**—The Netherlands cover an area of about 12,700 square miles, of which three-fifths have been formed during the human period, and almost the whole country is less than 300 feet above sea-level.

Owing to a variety of causes the tidal currents of the North Sea are stronger from west to east than vice versa, and their flow has produced a sand-barrier from Wieringen and Texel, to a point just east of Calais. Before A.D. 300 this barrier apparently consisted of a series of nearly unbroken chains, but since then changes, due probably to alterations in the configuration of the English Channel, have taken place. Roughly in Belgium and the southern Netherlands the coastline is retreating and a new dune formation is in process of growth. In Holland proper, the movement is reversed and the shore is extending at the expense of the sea, so that recent dunes are found to the west of the old ones.

These dunes vary in height from 30 to 150 feet, and have a steep seaward face. They are dry and porous, draining into marshy hollows, and so providing sites for settlement with possible drainage and agriculture close at hand, as witness the Hague with its famous park, and Haarlem with brewing and bulb-growing interests. Amsterdam and Flushing still have a dune water supply. Where necessary the dunes are supplemented by dykes or dams—the most famous being the West Kapelle dyke in Walcheren and the Hondsbossche Zeewering north-west of Alkmaar. Until recently the dams were almost invariably of earth, strengthened with piles and stones, but since the War ferro concrete has been employed with marked success.

Behind the dunes is Holland proper—the polder land, i.e. reclaimed land—an ancient lagoon closed (with the exception of estuaries and tidal channels) by the sand-barrier, and filled with sediment as a result of fluvial and marine action. At the

present day all the land to the west of a line through Groningen, Utrecht, and Antwerp is less than 3 feet above the Amsterdam

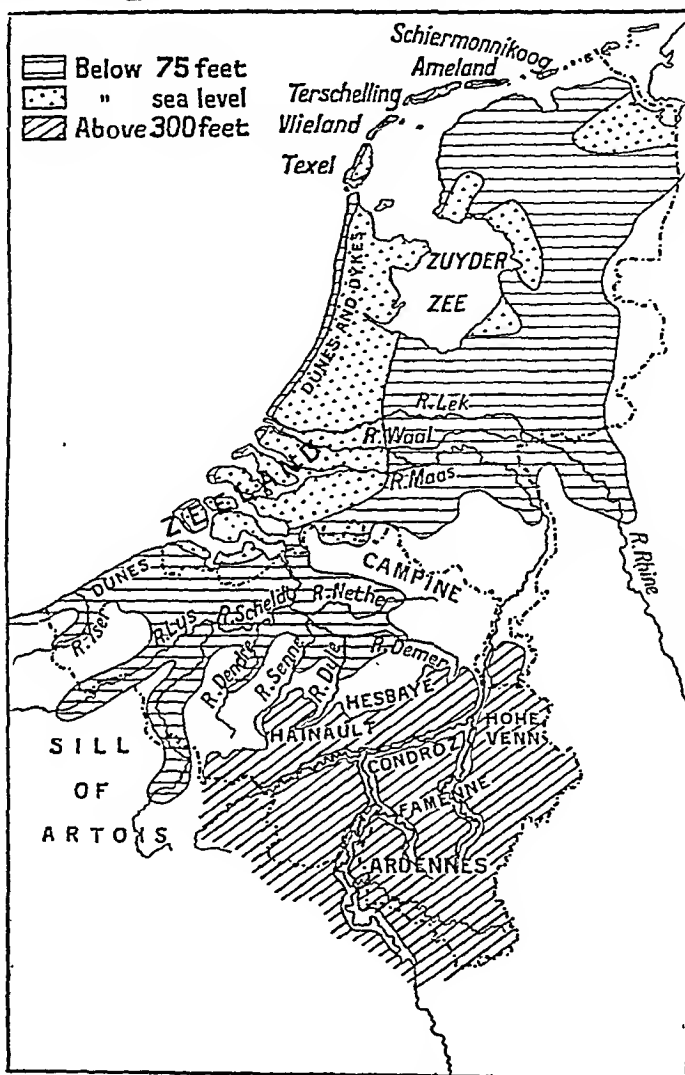


FIG. 66.—SIMPLIFIED RELIEF MAP OF THE NETHERLANDS AND BELGIUM.

zero, and would be flooded if the sea broke through the barrier. This area includes about 38 per cent. of the whole country.

The alternation of silt and peat layers probably indicates conditions of formation during a time of relative depression. The polders vary in type. The lowest are old lake bottoms—the so-called *droogmakerijen* of estuarine clay often surrounded by peat. Where the sea has broken through at a later date the peat usually has a later clay deposit on top. The drainage is necessarily artificial.

The remainder of the country is above sea-level, and therefore "high," though outside south Limburg the only places exceeding 300 feet are the "hills" of Imbosch (330 feet), and Hettenbeurel (315 feet) in Gelderland. The whole area is of Pleistocene age, and may be divided by a line through Nijmegen, Wageningen, Utrecht, and Vogelenzang, which marks the limit of the Scandinavian ice-sheet.

The glaciated area exhibits a typical morainal landscape, with true boulder clay in the north having a normal thickness of 3 to 15 feet, though locally there are patches with a depth of 35 to 40 feet.

In the north-east is the High Fen district, largely occupied by the Bourtanger Moor, which for centuries protected Holland from hostile attack, and is still a backward and difficult region. Towards the south the boulder clay has a considerable mixture of fluvial material, the interleaving of which indicates considerable oscillation of the glacier front. Tangential compression of the ice sheet has produced a series of glacial ridges, the chief being (1) Emmen to Groningen (2) Enschede to Ootmarsum (3) Lochem to Havelte (4) Arnhem to Hattem (5) Rhenen to Bussum. To the west of this last ridge, the deposits sink under the sea, as checked by numerous borings, and reappear again in Texel and Wieringen.

South of the dividing line the land exhibits fluvial deposits of coarse gritty sand, pebbles, and boulders in the lower strata, which probably represent the highest terrace of the old Rhine-Maas system. They are mostly covered by later deposits of sand with occasional patches of loam and clay. The whole district has a gentle slope to north and west, and is really the northward extension of the Belgian Campine, which



abuts on to the Tertiary formations along the line Maastricht-Antwerp.

Both glaciated and unglaciated areas are divided into sections by wide strips of river clay due to the Quaternary rivers excavating their beds in the soft deposits. These clay-lands are dyked and intensively cultivated. The rivers have decreased in volume since Pleistocene times, and the water network is now much simpler than formerly.

South Limburg is the highest part of Holland, averaging over 300 feet with a maximum altitude of 1,055 feet, and physically is a plateau bordering the northern Ardennes, which continues south-west as the Belgian Hesbaye. It consists of a sheet of gravel on Upper Cretaceous and Tertiary rocks, forming the principal terrace of the Maas, which, with its tributaries, is now deeply entrenched. The Upper Carboniferous rocks have here been heavily faulted in a south-east-north-west direction, so that some of the resultant *horsts* have been brought sufficiently near the surface to be workable.

The Belgian coast from Calais to Antwerp, a distance of forty-two miles, has a low, harbourless foreshore, backed by a dune formation behind which stretches the maritime plain proper. This is a strip varying from five to ten miles in width made up largely of peat on sand, covered inland by later sand deposits, and nearer the sea by clay. This formation is the result of marine deposition, and shows clearly the fluctuations of the sea-level in historic times, e.g. the silting up of the Zwin estuary between Sluys and Bruges, and the course of the Yser below Dixmude.

Behind the maritime plain is Flanders proper, stretching south to a line through Antwerp to St. Ouen, and including roughly the basins of the Lys and Scheldt. This is a level stretch of Tertiary clay either blue-grey or yellow, giving scope for numerous brickfields. Rising above the usually monotonous surface are isolated residual hills of Tertiary sand, which played a prominent part in the war of 1914-18, e.g. Cassel and Wytschaete.

Brabant occupies the centre of the Belgian plain, and consists of practically continuous Tertiary sands, which formed the

residual hills of Flanders. The general level is thus higher. The rivers have cut down through the infertile sand to the underlying clay, resulting in a very broken country, especially between Brussels and Louvain. Settlement is, therefore, largely in the valleys, where a good loam is frequently found, and the plateau itself is left sparsely populated.

To the north-east lies the infertile Campine, largely a continuation, at a lower level, of the Tertiary sands of Brabant, though towards and beyond the Dutch frontier the cover is mainly alluvium. This ill drained, marshy region is at present largely waste, but it has great possibilities, as beneath the Tertiary deposits the Carboniferous rocks come near enough to the surface to provide workable coal as in the area over the border.

To the south of Brabant is the high region of Hesbaye and Hainault, the best marked relic of the old Anglo-Belgian plateau, which farther east forms the plateau of Dutch Limburg. This is a rolling plain of fertile loam with a lighter sand cover in the east merging into a heavier clay in the west. The upper waters of the Senne and Dyle rivers have exposed the Lias and Triassic clays, giving rise to numerous brickworks round Tubize and Nivelles.

To the south lies the industrial valley of the Sambre-Meuse, formed originally by the overthrust of the Ardennes massif against the Anglo-Belgian plateau, and now grooved deeply by the two rivers, which have exposed the Carboniferous rocks along a line from Liège to Charleroi.

The Ardennes massif is a highland "region of difficulty". Immediately south of the Sambre, the hilly Condroz consists of parallel valleys and ridges of Upper Devonian or Carboniferous age, which are continued with less regularity west of the Meuse. A belt of heavily wooded plateau separates the Condroz from the Famenné depression along the line Chimay, Givet, Rochefort, March, where the schists and shales of the Upper Devonian have weathered down into a fertile soil. Isolated Carboniferous outcrops provide the small coalfield of Dinant.

The central plateau of the true Ardennes occupies the remainder of the country. It is high, ill-drained, and patchily forested with

large areas of peat and infertile clay, this latter very markedly on the Lias round Arlon. The rivers have cut deep gorges and are useless for transport.

The Brussels Basin is separated from the Paris Basin by the chalk downs known as the Sill of Artois, which, but for political forces, would form the south-west boundary of Belgium. These downs are from five to ten miles wide, and average between 300 and 500 feet in height. The summit is comparatively broad and level, but the sides are seamed and ravined in the characteristic chalk-country fashion. In two places, there are convenient gaps—St. Pol-Bapeaume and Landrecies-Guise—which have exercised marked influence on human movement. Of almost equal significance are the promontories of the Melantois, which stretches from a line through Béthune and Vermelles to a point half-way between Lille and Tournai; and south Hainault on a line through Le Câteau and Mons.

Climate.—The climate of Belgium and the Netherlands is of the north-west-European type, approximating to that of south-east England, but with rather greater extremes. In detail, it depends mainly on the proximity of the sea, the elevation of the land, and the prevailing winds.

The rainfall is everywhere abundant at all seasons and shows a rise with distance inland. Over most of Holland the yearly fall rarely exceeds 30 inches, e.g. Helder 26·9 inches; Groningen 26·8 inches; Utrecht 27·5 inches. Similar figures are given by most stations in the Brussels Basin, e.g. Antwerp 27·5 inches; Brussels 29·6 inches; but in the Ardennes, as would be expected, the figure rapidly rises. In the Condroz, 27·5 inches is reported, but in the Hohe Venn 40 inches is a common figure. Farther east, in Luxemburg, the figure again falls to 30 inches in the west and 25 inches in the east.

There is no marked periodicity, but it may be noted that the true maritime type with autumn maximum is confined to a very narrow coast strip, while inland the winters are drier and the summers wetter.

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total.
Brussels	. 2·2	1·8	2·0	1·7	2·3	2·5	3·1	3·1	2·7	2·9	2·7	2·6	= 29·6
Utrecht	. 1·9	1·6	1·8	1·3	1·9	2·2	3·1	3·3	2·8	2·8	2·4	2·4	= 27·5

The heavier autumn figure is due to great cyclonic activity, and excess of warmth in the sea, but the figures show that distribution is very even, as would be gathered from the fact that the average number of rainy days per year is 195 at Brussels and 204 at Utrecht. Although the rainfall is not high, both Belgium and the Netherlands are "damp" countries, owing to the persistent cloud and high relative humidity.

Temperature shows a slightly greater difference between summer and winter than in eastern England.

	Alt feet	Jan	Feb	March	April	May	June
Brussels	318	34.4	36.1	39.7	46.9	53.2	59.7
Utrecht	43	34.2	35.6	39.2	46.4	53.2	59.9
Groningen	33	33.4	35.2	38.3	45.0	52.0	58.6
London (Kew)	18	38.7	40.0	42.5	47.4	52.6	59.2
Cambridge	41	37.5	39.0	41.9	47.0	52.2	58.8

	July	Aug	Sept	Oct	Nov	Dec	Range
Brussels	63.0	62.2	57.7	49.5	41.2	35.6	28.6
Utrecht	62.6	62.1	57.2	48.9	40.5	35.8	28.4
Groningen	61.7	61.2	56.7	48.6	39.7	35.4	28.3
London (Kew)	62.8	61.7	57.1	49.2	43.5	39.3	24.1
Cambridge	62.4	61.5	57.1	48.9	42.6	38.0	24.9

In both Belgium and the Netherlands, the coast range is rather less than inland, but the whole area is so small that great variations are not possible, with the exception of the Ardennes. In general, the summers are not unpleasantly hot, a mean July figure of 60° to 65° F being the average, and the winters not too cold, though in Holland especially, rivers and canals are frozen over for a considerable period, the mean January temperature being about 32° F, while the Belgian stations return a slightly higher figure.

The Ardennes temperature, like the rainfall, shows marked individuality due to its elevation. The winters are very inclement, with heavy rainfall, violent winds, severe frost, and frequent snow.

As in the British Isles, the prevailing winds are from the west and south-west, the month of greatest frequency being November, when they often cause inundation from the sea. In the spring, a persistent north-east wind is common, resulting in the low rainfall figures for March and April. This alteration of wind direction has a strong influence on the set and power of the tides, thus causing variation in the constitution of the dunes and in the deposition of the sea-clay outside them. The skies are very cloudy—in fact, cloudiness and inconstancy may be considered the chief climatic characteristics of both countries, and there is, necessarily, much fog.

On the whole the climate is not good. The deficiency of sunshine is serious, and the damp conditions in Holland and Zeeland, together with the prevalence of fog, affect the vitality and temperament of the people adversely. On the other hand, the climate is certainly good for agriculture, as both the Dutch and Belgian soils require a good deal of moisture fairly evenly distributed.

**Vegetation.**—The plant forms of the dunes are usually stunted and meagre. The sand reed is widespread, especially in Drente and Overijsel, where it is used for mat-making; buckthorns and brambles, furze and juniper are common, and play their part in binding the dunes together. Among the humbler varieties are Solomon's-seal, the marsh orchis, asparagus, and various thymes and grasses.

On the coasts and mud-banks, sea plants assist the process of marine deposition, some of the most useful being the sea aster, sandspurry, club rush, and floating meadow grass, this last providing pasture for cattle and sheep.

On the sandy lands which occupy much of Gelderland and the Campine, heath and ling grow in profusion, but the pasture lands exhibit a more varied flora. Marsh trefoil and rushes are common, while ditches and pools support water-lilies, the greater and lesser reed mace, sweet flag, and bur-reed. Almost all the rivers and canals are bordered by willows, but otherwise timber is confined to the higher eastern and southern districts, and consists mainly of scattered copses of birch and elder. There

is an increasing area of woodland as afforestation schemes progress, the chief species being beech, oak, ash, and elm.

Belgium has not such a highly individualised flora, except along the dunes and maritime plain where the Dutch species reappear. In the Brussels Basin proper, the student will not find anything unfamiliar to an English botanist, though, owing to the greater intensity of cultivation, there is less waste land and therefore less profusion.

In the Ardennes, with its poor soil and inclement weather, there is less variety, large stretches being occupied only by heath and gorse. There is little true woodland north of the Sambre, existing woods being mainly of birch, hazel, and ash, but in the Ardennes there is much true forest, including oak, beech, ash, and pine.

**Fisheries.**—The Dutch fishing industry apparently commenced on a large scale in the fourteenth century, and expanded rapidly with the rise of the Dutch Republic in the sixteenth century, only to decline in the seventeenth and eighteenth centuries before a revival commenced in the latter half of the nineteenth century.

The deep-sea fishery of the North Sea is of two kinds. Vlaardingen and Maasluis are the head-quarters of the salt-herring fishery carried on in the summer and autumn, while at Scheveningen, Katwijk, and Noordwijk the fresh-herring industry is all important. There is a large export of salt fish. In the winter, the largest boats are laid up, and the remainder take to line fishing for halibut, cod, and haddock. The coast trawl fisheries yield sole, plaice, turbot, and skate. What may be called the inland fisheries of the Zuider Zee, and the south Holland and Zeeland waters are chiefly interested in anchovies and shrimps, while the East Scheldt produces excellent oysters.

**Production.**—1919. High sea and coast = 251,036,000 kg.; value = £5,606,216.

The Belgian fishery is relatively unimportant, though the coast towns, especially Ostend, have their share in the North Sea fishery, and pursue a winter routine generally similar to that of the Dutch.

**Agriculture.**—It is obvious that, in the polder lands of Holland, agriculture will be of paramount importance, and that its success will depend mainly on the problem of drainage—a problem which the people have been attacking continuously for nearly 2,000 years.

About the time of Cæsar (*circa* 50 B.C.) the inhabitants built low hills—*terpen* or *wierden*—in what must then have been a great marshland, and for centuries these were the only settlements. The first dykes appear to have been constructed round

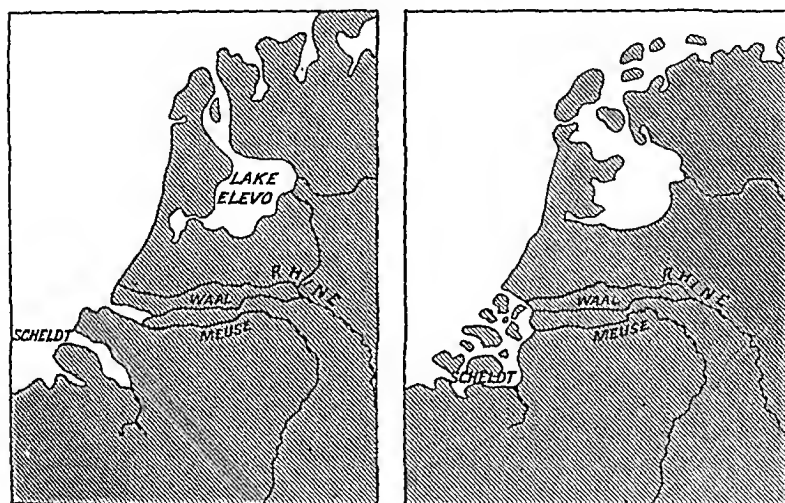


FIG. 67.—HISTORICAL DEVELOPMENT OF THE DUTCH COASTLINE.

The Netherlands in the 1st century, A.D.

The Netherlands in the 10th century, A.D.

about A.D. 1000, and with the appearance of windmills in the fourteenth century systematic drainage was possible. After the establishment of the Dutch Republic in the sixteenth century great progress was made. The utilisation of steam and electric pumps in the nineteenth and twentieth centuries afforded a fresh impetus, the great Haarlemmermeer being drained between 1848 and 1852, and since 1920 the Zuider Zee scheme has been taken in hand. In Roman times, the Zuider Zee was a fresh-water lake with deltaic branches of the Rhine going off to the

sea, but early in the fourteenth century—the sea breached the dunes and gave it more or less its modern character. The accompanying diagram (Fig. 68) shows the main elements in the present reclamation scheme, which will result in the addition

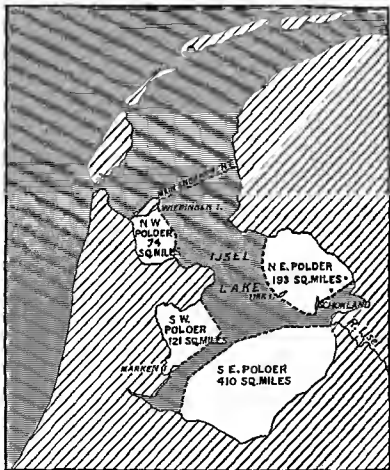


FIG 68.—RECLAMATION SCHEME OF THE ZUIDER ZEE

of 800 square miles of fertile land, and the formation of a large fresh-water lake to which the name of IJsel has been given.

The first step in the reclamation of land is to surround it by dykes which protect it from further inundation and render possible control of the water inside.



This is impoldering, and is followed by drainage. The polder is intersected by a network of ditches at right angles to one another, which serves the double purpose of supplying the polder with water and leading off the surplus. In Zeeland and South Holland the polders are able to discharge naturally into the sea at low water through self-regulating sluices, but in North Holland and Utrecht the water has to be raised by windmills or pumps into some part of the vast network of canals and lakes which cover the country, and which is divided into separate systems or reservoirs known as boezems. From the boezem the surplus water is discharged into the sea at low tide, the flow being regulated by the necessity of maintaining a sufficient volume of water in the polder ditches.

Land is inevitably dear, and is, therefore, intensively cultivated, the chief interests being horticulture and market-gardening. The principal vegetables are early greens, peas, and beans of every kind, asparagus, onions, and cucumbers. Flowers are mainly represented by the bulbous varieties, of which the total export is valued at £250,000. The chief centre is Haarlem, where the bed of the old Haarlemmermeer affords ideal conditions. Alkmaar is the centre of the most successful market-gardening district. Fruit is grown everywhere, with a special culture of grapes and figs in South Holland. The polder area presents a somewhat monotonous appearance of green, level land intersected by regular lines of willow-bordered canal, and dotted with windmills, pumping stations, sails of canal boats, and invariably, a clump of trees round each farmhouse.

The sandy heath lands in the south and east formerly supported large numbers of sheep and cattle, but of late their place has been increasingly occupied by woodland, afforestation being vigorously supported by the Government. The heavy clay lands, notably Gelderland, which has a strawboard industry, and Zeeland, repay the intensive cultivation of oats, barley, wheat, flax, and beetroot, and where conditions are favourable an increasing area is under rape, mustard, canary, and caraway seed, chicory, tobacco, and hops. The cereals grown are insufficient for the country's needs, and there is a large import,

especially of maize for cattle feeding, and barley for the distilling and brewing industries.

Nearly 35 per cent. of the country is under pasture, and cattle-breeding is one of the greatest Dutch activities, the chief provinces

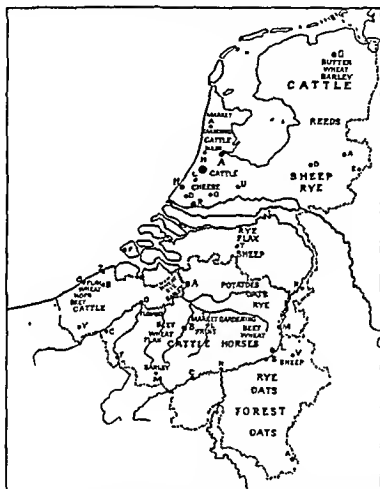


FIG. 69—VEGETABLE AND ANIMAL PRODUCTS OF THE NETHERLANDS AND BELGIUM,

being Friesland, Utrecht, and North and South Holland. Horses and goats are important in Gelderland. Stock-breeding, like agriculture generally, has been carefully fostered by the Government, which provides courses of instruction and numerous subsidies for breeding, drainage, etc.

## STATISTICS 1919

	Acres.
Area of Holland . . . . .	8,052,500
In cultivation . . . . .	5,906,670
Arable . . . . .	2,180,700
Pasture and meadow . . . . .	2,898,600
Market gardens . . . . .	143,910
Orchards . . . . .	61,675
Arboriculture . . . . .	6,523
Floriculture . . . . .	1,418
Bulbs . . . . .	11,733
Woodland . . . . .	597,734

The holdings are usually small and cultivation very intensive.

The sandy and peaty soil of the Belgian maritime plain is still of unusual fertility, and large cereal crops are grown, together with flax and beet. Cattle-breeding is of great importance. The chief problem of the area is the disposal of underground water, which is dealt with by a close network of canals and dykes. Lyde suggests that the housing of the people in large villages, mostly along the dykes, is the appropriate reaction to the controls of a small and fertile land area with a surplus-water problem.

The level clays of Flanders are not naturally fertile, but unremitting intensive culture, involving a low standard of living (from the English point of view) and a long working day, have resulted in big crops of wheat, sugar beet, flax, tobacco, and hops. The Alost and Poperinghe districts specialise in hop production, and have also a growing output of chicory. The Flanders holdings are usually small, being smallest in the west, where the land improves somewhat and the standard of living is higher.

The light, sandy soils of Brabant at one time grew similar crops to those of Flanders, but a more intelligent use of its possibilities has largely replaced them by fruit-culture and market-gardening. Gooseberries and raspberries are common everywhere. There is a special production of grapes, grown under glass, in the Senne valley round Brussels, while Louvain raises strawberries and tomatoes. In the east, especially in Limburg, apples, pears, and cherries take pride of place. Brabant has a well-deserved reputation for horse-breeding, carried on under careful Government supervision, and encouraged by societies which hold frequent shows and provide numerous prizes.

The sandy Campine plain to the north-east has always been neglected, and large areas are still marsh and waste. With the development of the underlying coal seams, this area will one day carry a dense population.

The high, undulating clay area of Hesbaye and Hainault has a varied soil on which wheat, barley, hops, and beet are successfully grown. There is also a growing production of tobacco, and cattle-breeding is on the increase.

South of the industrialised Sambre-Meuse valley is the Ardennes massif. The hilly Condroz is a progressive district of large farms (250 acres or more) with heavy crops of rye, wheat, oats, and winter barley. The Famenne depression has similar interests with the addition of cattle-breeding. The Ardennes proper is two-thirds waste or forest, and life is still relatively backward, especially in the dairying district of Arlon. The people are vigorous and will improve their condition, but it would seem that, in the main, this will always be a "region of difficulty," where Man will never do much more than wrest a living from a grudging soil and an inhospitable climate. Potatoes, rye, and oats do fairly well, more especially round Arlon, and there are large herds of pigs in the woodlands. Afforestation on big and scientific lines is, perhaps, the district's best chance.

With the exception of the Campine and Ardennes, almost every available inch of Belgian soil is cultivated. The agricultural population is necessarily dense, and the land subdivided into very small areas. One person in every ten owns some land, i.e. the Belgians are a nation of smallholders, labourers being few, with the exception of young men who are learning how to farm before taking up land of their own. There are "large" farms (250-500 acres), but these are diminishing in number owing to the insistent demand for small holdings. Land is expensive, but, on the whole, yields are good. The Belgian does a long, hard day's work, but his work directly benefits himself, and the expense of profitably working a small holding is reduced by the big share which his womenfolk take in the daily toil.

Industry.—The Netherlands are essentially an agricultural

country. Covered with recent deposits, there can be no great mineral wealth on which a big industry could be based, and the deficiency cannot be compensated by water power, as in Italy and Switzerland. There is, however, one area with possibilities.

South Holland lies in the area of the great Anglo-German coal basin, but the coal, if it is there, is too deep to work—with one exception. In South Limburg, cross faulting has cut the country up into *horsts* at different levels. Many of these are so low as to be out of reach; many were so high that the coal has been denuded; but a few are at a practicable level; and during and since the war of 1914-18 development has been energetically carried out. The coal is a good bituminous one of the long-flame variety, similar to that of the neighbouring Campine field. There is an estimated reserve of 1,741 million metric tons, with an output in 1920 of 4,000,000 tons; 1925, 6,000,000 tons, and 1930, 7,500,000 tons (estimated).

The exploration of this field and the exigencies of the War years of 1914-18 gave a great impetus to Dutch manufactures, and there is now a great variety of products, though, of course, on a comparatively small scale. Of great importance, however, is the shipbuilding and repairing industry in the yards of Amsterdam, Rotterdam, and Flushing. In 1920, Dutch yards launched 561,035 tons of shipping, and during the last few years Rotterdam has been competing successfully with English ports in the ship-repairing industry.

The war of 1914-18 also led to the exploitation of the salt beds in East Gelderland, which in 1920 produced one-sixth of the country's consumption.

Dutch textiles are not of great value. Tilburg makes woollen goods and "brown Holland" from the local flax, and Deventer, in the centre of a sheep district, has a carpet industry. Towards the German boundary, Enschede and Almelo are cotton towns using coal from the Ruhr, as does Roermond, a mixed cotton and woollen-centre. In the provinces of Drente and Overijssel, there is a jute-sack industry, and the interesting mat-plaiting from reeds, which now competes in the English market.

With plentiful and widespread supplies of good clay, brick-

and tile-making is one of the most important of Dutch industries, but no one centre seems to be predominant. The same local material is used in the famous pottery works at Gouda, The Hague, and Delft.

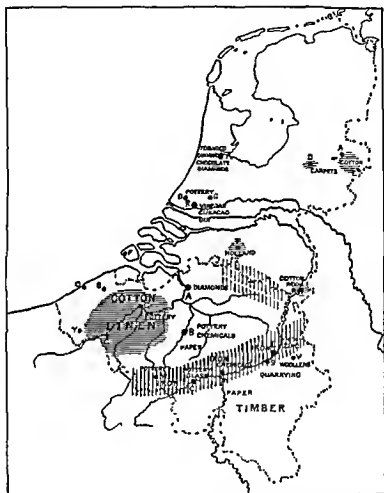


FIG 70—INDUSTRIAL DEVELOPMENT OF THE NETHERLANDS AND BELGIUM

Based on agricultural products, Groningen has an increasing butter export, paralleled in the west by the cheese-making of Edam and Gouda, which have also developed a large margarine industry by using imports from the Dutch East Indies. Rye is responsible for the gin of Schiedam and the curacao of

Rotterdam, which also produces vinegar from the vegetables of the Alkmaar district.

As Amsterdam is the main centre of the home trade, the so-called "colonial" industries are mainly concentrated here. Tobacco, chocolate, Peruvian bark, and rubber are all imported from the East Indies, and provide the raw material for vigorous industries. Amsterdam shares with Antwerp the practical monopoly of diamond cutting, the trade being largely in the hands of Jews.

To the south the upland districts of the Ardennes, Eifel, Hunsrück, Sauerland, Westwald, and Taunus are all older than the coal measures, and on the north and south flanks of these ancient massifs great quantities of coal were laid down in the Carboniferous limestone. On the south is now the Saar Basin, and in the north the so-called Anglo-German field.

The main Belgian field is not clearly defined on the south (as in Germany) owing to the great Ardennes overthrust northwards, i.e. the edge is buried, but on the north the boundary is clearly marked by the worn-down edge of the Anglo-Belgian plateau. Thus the area is a narrow trough, passing right through the country from Liège to Mons, a distance of about 115 miles. Its width varies from three to nine miles, and the coal is deepest in the west. There are five main basins, each the seat of a distinctive industrial group—Liège, Basse-Sambre, Charleroi, the Centre, and the Mons field. There were formerly deposits of iron-ore of varying quality in the trough, but these are now worked out; and the large Belgian iron industry has to rely on imported iron (mainly from Lorraine). Iron goods are manufactured everywhere.

A gun industry was established in the Liège-Seraing district in the sixteenth century and early obtained a high reputation. It is still largely a handicraft, embracing a great variety of skilled work, and dependent largely on hereditary skill. There are, in addition, ironworks producing hardware of all descriptions, and many glass, coke, and gas plants. The Basse-Sambre field is the smallest of the five, and, in addition to the inevitable iron-works, has a pottery industry.

Charleroi specialises in coal-tar distillation, and has big brewing and distilling interests, with important chemical and glass works, the Centre, grouped round La Louvière, has a flourishing glass and pottery industry and large sugar refineries.

Mons is the centre of the rolling and puddling industries, manufactures glass and pottery, and has many breweries and sugar-refineries.

To the north-east lie the Campine coal measures, separated from the Westphalian fields by heavy faulting, and deeply buried under Tertiary and Quaternary formations. At present the expense of working is almost prohibitive owing to the great depth of the Carboniferous formation, the need for elaborate drainage in a water-logged district, and the expenses consequent on housing an industrial population in what is at present a virtually unpopulated area. Nevertheless, the field is of the greatest potential importance, and will constitute one of the chief factors in Belgium's future. The presence of iron, in the form of bog ore, and sand in unlimited quantities, points to an extension here of the iron and glass industries of the Sambre valley. Development will be from the south, where the overlay is thinnest.

The small and scattered Dinant field is of no economic importance and may be neglected.

East of Liège are the famous zinc deposits of the Moresnet district, now in danger of exhaustion, but still the basis of a big hardware industry at Liège and Charleroi. In addition to her wealth of building clay, Belgium has many varieties of slate, marble, and building stone. There are between 1,600 and 1,700 quarries scattered over the country, the most famous being the limestone quarries at Sprimont, near Liège.

For centuries Flanders has been the home of textile industries, and, though most of the conditions which placed Bruges and Ypres among the foremost towns of Europe have passed away, the tradition remains, which, with the natural advantages of a suitable climate, abundance of coal, cheap labour, and lime-free water eminently suitable for bleaching and flax retting, has enabled Belgium to compete successfully with her modern rivals.



Ghent is the centre of the cotton industry, and thanks to her excellent position on the Lys-Scheldt confluence, has undergone the same transformation as Rouen, and is now a busy manufacturing city with a medieval kernel.

Ypres, Arras, and Cambrai, whose names carry their own textile significance, were important before the war of 1914-18, and with the gradual completion of the necessary rebuilding process are once again taking their old position. Roulers, with a lime-free water supply, is the chief centre of the linen industry, which is, however, spread all over Flanders. Tournai, Courtrai, and Oudenarde should be noted, the latter being the home of the originators of the Gobelin tapestries. The large part played in Belgium by home industries is especially noticeable in the linen districts. Far away to the east is the woollen town of Verviers, with an exceptionally pure water supply, and handily placed for the Ardennes sheep.

The diamond cutting of Antwerp, like that of Amsterdam, has a history of centuries, though while Amsterdam specialises in small brilliants, Antwerp concentrates on large stones, especially rose diamonds, often called "roses d'Anvers." Of more recent origin is the flourishing paper manufacture in the Senne Basin, between Brussels and Charleroi.

Belgian industry suffers from bad social conditions. Wages are too low and the hours of work too long to permit of a really happy and progressive industrial population. The insufficiency of the workers' rewards is illustrated near the western border, where many Belgians cross the frontier daily to obtain the higher wages paid in French factories, returning to their own country only to sleep.

Illiteracy is common and the standard of living low. Belgium is a small country and progress expensive. Competition with her richer neighbours leaves little margin for social amelioration and advancement. In this connection, the lack of a complete and scientific educational system is a serious drawback. Before 1914, party politics and the inveterate hostility of Protestants and Roman Catholics prevented any serious progress. The rude awakening of the War, however, provided a stimulus, and

since 1918 the Government have been striving to remedy this deficiency

**Trade**—With her good geographical position, well-equipped harbours, and rich colonies, the Netherlands inevitably takes a high place as a trading country, both on her own and other countries' accounts. Her imports consist mainly of colonial products tobacco, coffee, tea, cocoa, spices, tin, etc., raw material ores, coal, timber, etc., and food stuffs. Her exports fall into two obvious classes agricultural and horticultural produce, with their derivatives, such as butter, cheese, jams, liquors, strawboard, etc., and colonial products, including chocolate, cigars, vegetable oils, and rubber.

Communication in the Netherlands is now peculiarly complete. The necessary existence of a complex network of waterways naturally established the supremacy of water transport—a supremacy emphasised by the desire to make the most of the Rhine highway—and until recently the Dutch railways were not outstandingly efficient. Of late years, however, much has been done, and there is now an extensive light-railway system, similar to that of Belgium, and the main lines are considerably improved.

The main movement outside Holland is Rhinewards, there being little traffic directly east with north Germany, while the main European east-west routes are rather a Belgian than a Dutch concern.

This Rhine transit trade is of immense importance, since the country stands on the estuaries of the Rhine, the Maas, and the Scheldt, which constitute the principal entries into Central Europe. Rotterdam and Amsterdam are, therefore, world ports of the first rank, though there is a marked difference in their trading activities.

Amsterdam, on the Zuider Zee, became a modern port when ~~the construction of the North Sea canal to IJmuiden~~ allowed big ships to reach the town. She is pre-eminently the centre of home trade and the world trade in Dutch colonial produce. Her quays are over seven miles in length, and she has impressive timber and oil stores.

Rotterdam, at the junction of the Lek, Waal, and Maas, rose



manufacturing hinterland, and, until recently, an inadequate railway system, have made her definitely a transit town, relying for success on the connexion of ocean and river. Her quays extend for thirty miles, and are equipped with the most modern appliances—electric cranes, coal-tips, pneumatic grain elevators, etc. Her continental rivals are Antwerp, which has good railway facilities and a vigorous industrial district close at hand, helped by French and Belgian preferential duties, and Hamburg, with the support of Germany behind her.

Gorinchen should be noticed. It has a growing trade, and is the point of division for the Antwerp and Rotterdam traffic. Flushing and the Hook of Holland are packet ports.

By canalisation of the rivers, the provision of canals where necessary, and the construction of an adequate railway network, supplemented by a peculiarly elaborate development of light railways, Belgium has obtained one of the most efficient systems of communication in Europe, which is both a fundamental cause of her industrial success and the determining factor in the siting and growth of her towns and harbours.

The River Senne, flowing northwards, divides the Brussels Basin into two nearly equal sections. To the west is the textile, agricultural district, possessing seven good routes into France, and, through the packet ports of Ostend and Zeebrugge, direct and easy communication with England. The gathering of the drainage at the Lys-Scheldt confluence provides Ghent with a dominating site, and it has inevitably become the chief city of western Belgium.

Eastern Belgium has smaller rivers, e.g. the Dender and the Dyle, and is a poorer country, but again the central position of Malines (Belgium's ecclesiastical capital) and Louvain (the intellectual centre) should be noticed. The opening up of the Campine coalfield will lead to big developments in this area.

To the south is the crowded, busy valley of the Sambre. The natural exits at either end are in foreign hands, and with the Ardennes behind, its products inevitably move northwards to the point upon which all the waters of Belgium converge—the site of Antwerp.

Antwerp is favoured in several ways. It is placed on the natural focus of the river system, emphasised by the extensive canal and railway network, and this focus, on the centre of a concave curve of trade routes, cuts the coast on the centre of the great inward curve made by the sea in the fifth century.

Although the Scheldt is relatively a short river, it receives so many feeders that it is a big one, and its estuary, thanks to the Zeeland islands, is absolutely sheltered.

Antwerp is as near the world's great highways as London; and, of course, much nearer, and in direct contact with, the European rail and canal systems. Her only real drawbacks are that Belgium is a small country, that fogs are frequent, and that recently the docks have suffered from congestion due to lack of foresight in bygone years. This last defect is now being remedied.

And yet Antwerp, although the indisputable commercial centre of the country, is not the political capital.

The position of Brussels is instructive. It has a central site on the River Senne about mid-way between Antwerp and Charleroi, i.e. on what was once the "good" ground between the impracticable Ardennes and the northern swamps, and on the dividing-line between east and west. From the government point of view this position cannot be equalled, and Brussels has become the unquestioned leader of culture and fashion. It is a well-planned, well-built, handsome rather than beautiful city, deserving its nickname of "Petit Paris."

Colonies.—The chief oversea possessions of the Netherlands consist of the Dutch East Indies, which include Sumatra, Java, Célebes, the greater part of Borneo, the lesser Sunda islands, the Moluccas, and Western Timor, while farther east lies Dutch New Guinea—the total area being nearly 750,000 square miles with a population of over 30 million.

Lying in the tropics, the climate of all these lands is hot and moist, but as most of the islands have considerable areas of high land the Dutch have succeeded in establishing permanent settlements.

As a rule, the soil is fertile and vegetation luxuriant. Under

Dutch rule the islands send home an immense amount of tropical produce. In Java, coffee is the chief export, in addition to tea, tobacco, cinchona, and sugar-cane. Sumatra produces tobacco and rubber, Celebes coffee, cocoa, and sago, Borneo, tobacco and sago. The Moluccas for centuries have monopolised the spice trade, including cloves from Amboina and nutmegs from the Banda islands. The small islands of Banka and Billiton have world famous tin mines.

The chief towns are in Java, including Batavia, the capital of the Dutch East Indies, Surabaya, the chief commercial centre, and Samarang.

In Sumatra are the ports of Bencoolen and Palembang. Banjermassin is the capital of Dutch Borneo. Dutch New Guinea has so far been left practically untouched, and little is known of its possibilities.

In South America is Dutch Guinea or Surinam, covering nearly 50,000 square miles. The capital is Paramaribo, which exports cocoa, coffee, and bananas.

The only overseas possession of Belgium is the Belgian Congo, formerly the Congo Free State. This area roughly coincides with the basin of the River Congo, and covers probably 900,000 square miles. Lying in the tropics, the climate is unhealthy for Europeans, and so far permanent settlement has proved unsuccessful. The chief exports are palm oil, ivory, and rubber, mostly from Boma, the principal port, at the mouth of the Congo River.

### LUXEMBURG

The small duchy of Luxemburg (area 998 square miles) lies to the south east of Belgium, tucked in between Germany and France, and is to day the only surviving fragment of what was once an important State.

Geologically it consists of two regions. The northern half, known as the Osling, forms part of the Devonian plateau, which stretches away east and west, while the south, at a lower elevation, consists mainly of Lias and Triassic clays, the river valleys being largely alluvium covered. This district is often known

as the "Bon Pays," and contains the forest of Grünwald, reputed one of the largest in Central Europe. The whole duchy is drained by the River Alzette and its main stream the Sauer, which in its turn is a feeder of the Moselle. All the rivers in the "Bon Pays" have eroded their beds deeply in the soft clays. Climatically the Ösling is similar to the Ardennes, though being farther east the rainfall is lighter. The south at a lower level has more genial conditions.

Economically the country has three divisions. The Ösling is a backward district with a small and struggling population dependent on a not very efficient agriculture.

The south-east, bounded by the River Moselle, is a more prosperous agricultural land of villages with a large vintage.

The south-west, mainly consisting of the canton of Esch, has become increas-

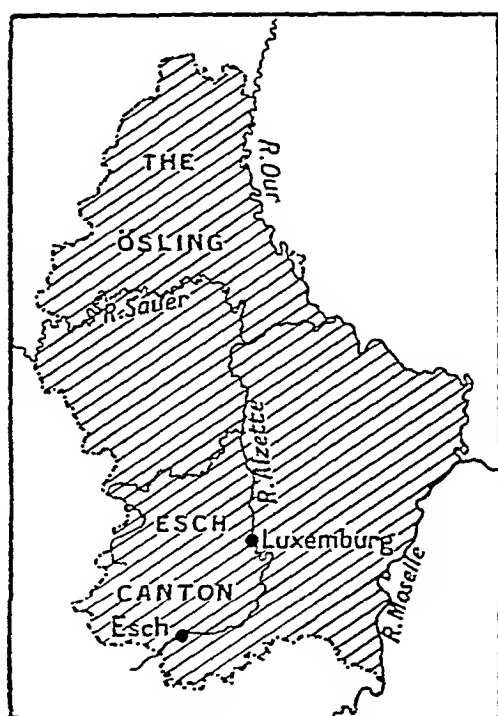


FIG. 72.—THE DUCHY OF LUXEMBURG.

ingly industrialised, as here there is a continuation of the Lorraine iron deposits, together with some lead and antimony. A third of the people are industrial workers, chiefly engaged in iron mining and smelting, though there are also potteries and saw mills, while the remainder are on the land.

Luxemburg town has a population of about 20,000 and is the centre of several industries, all, of course, on a small scale. It

occupies a strong position on the confluence of the Petrusse and Alzette rivers, and consists of two towns, the Upper and the Lower, about 200 feet below. In the time of Vauban, it was one of the strongest fortresses in Europe, but the old fortifications are now transformed into boulevards and parks.

**Race and History**—All over the world the frontier zone between men of different races has been a region of friction and danger, and in the absence of a well-defined natural boundary attempts have everywhere been made to set up something in the nature of a transition area—a buffer-state.

Few ideas have been so persistently tried in Europe with such persistent failure as that of a Middle Kingdom. The causes of this failure are written in every chapter of European history. The French and German peoples meet in the Rhine Basin, and the Rhine provides by far the best line of communication into the heart of Europe from the north-west. Control of this highway and its entrances is inevitably a prize for which nations will be ready, if not eager, to struggle. One aspect of this struggle is summed up in the centuries-long attempt of France to establish a Rhine frontier, and the German reply expressed in "Die Wacht am Rhein." The racial antagonism of Frenchman and German, aggravated by the existence between them of a thoroughfare which both desire, is thus one of the main strands of European history and polity.

From the British standpoint the whole matter wears a different, but equally important, aspect. One of the fundamental aims of British policy has always been to prevent the stretch of coast from Calais to Cuxhaven passing into the hands of a single European Power. This stretch contains the main entrances into Europe from the west and north-west—the Belgian group, Bruges, Ghent, and Antwerp lying at the end of the routes round the Ardennes *massif* to the Rhine and Rhone, and the Dutch group, centring on Rotterdam, which covers the end of the Rhine artery into the heart of Europe. Conversely, these ports are best placed for an attack on any part of England between London and Newcastle. "Antwerp is a pistol pointed at the heart of England," said Napoleon.



The control, then, of what we may loosely call the Rhine Basin is thus a basic consideration with the three Great Powers of England, France, and Germany, and we shall not be far wrong in saying that the greater part of Western European history, at any rate in modern times, is a commentary on this fact. The trials and triumphs associated with the names of William the Silent, Parma, Richelieu, Mazarin, Louis XIV, Marlborough, Napoleon, Moltke, and Foch show clearly this twin thread of history.

So closely are these strands intertwined that at first sight they may be mistaken for a single thread, but on a closer examination their dual nature is revealed. The historian will note that, if the struggle is confined to the Middle Rhine, England does not always

interfere, e.g. the Thirty Years' War (1618-48), and the Franco-Prussian War of 1870-71, but if the scene shifts towards the North Sea England invariably steps in.

If established, the Middle Kingdom would thus eliminate what has been, and is, one of the chief causes of discord in Western Europe, but unfortunately such a state has never been practicable. The Netherlands, Belgium, Luxemburg, and the vexed territory of Alsace-Lorraine mark the failure of such attempts, and yet

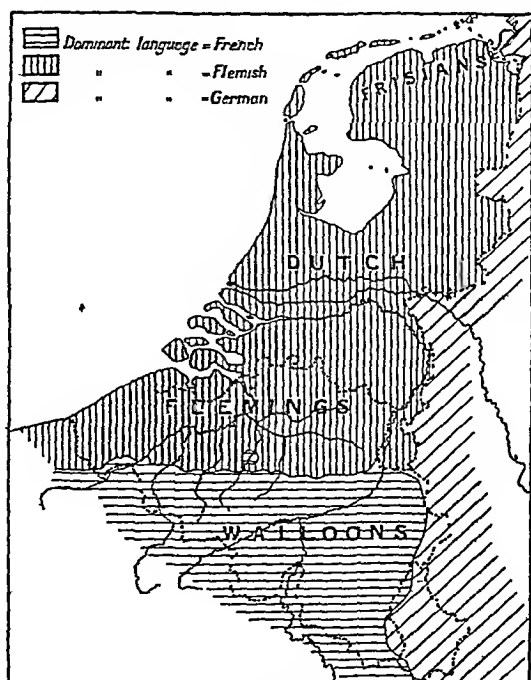


FIG. 73—PEOPLES OF THE NETHERLANDS AND BELGIUM.

by their very existence bear witness to the desirability of such a kingdom.

The cause of failure is largely geographical. It is difficult to

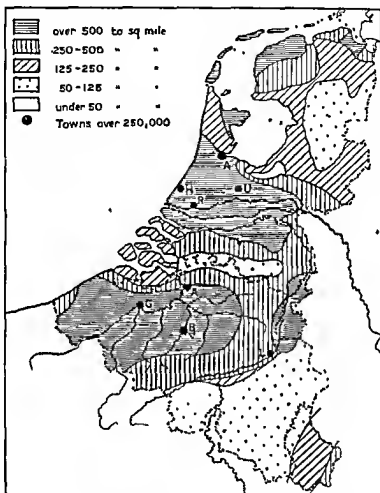


FIG. 74.—MAP SHOWING DENSITY OF POPULATION IN THE NETHERLANDS AND BELGIUM

see how a really homogeneous Middle Kingdom could be created. Apart from racial difficulties, its length would be wholly disproportionate to its breadth; there would be no natural centre, and it would lie fatally open to attack from either side.

Geographically it should not have been so difficult to unite

the delta of the Rhine, Maas, and Scheldt systems into one unit, but this too has never been achieved—the well-meant attempt of the Vienna Congress in 1815 being annulled within thirty years. This failure cannot be ascribed to geographical causes as such. History has played a very large part in such a result, and historically the Netherlands and Belgium require separate treatment.

#### NETHERLANDS

The Dutch State, like Venice, had its origin in the movement of a people before their stronger neighbours into an apparently worthless region where pursuit would not be either easy or profitable. The permanence of the State, once founded, was due to the fact that the refuge was, and is, peculiarly adapted for defence. On the west and north lay a difficult and treacherous sea; on the east was an almost impassable marsh—the Bourtanger Fen. Invasion was only really practicable from the south, and in the last resort this could be, and was, countered by the desperate expedient of cutting the dykes and flooding the land. It was largely this superiority of defence which enabled the Netherlands to become an independent State nearly 300 years before Belgium.

**Racial Origin.**—In the time of Julius Cæsar, this delta land north of the Waal was inhabited by a people mainly of Nordic origin. Between the Waal and the Rhine were the Batavians, and from the Rhine to the Ems the Frisians, who seem to have lived and settled on the artificial hillocks (*terpen* and *wierden*) from which archæologists now get their information. About A.D. 13 Drusus conquered the Batavians, who were not absorbed into the empire, but recognised as *socii*, or allies, and so formed a kind of advanced guard, later supplying some of the best material in the Roman armies. The Frisians seem to have accepted a similar arrangement after their defeat by the Roman general Corbulo in A.D. 47. Some time in the fifth and sixth centuries a series of Saxon movements westward submerged the Batavians, and confined the Frisians definitely to the coastal and depressed area north of the Scheldt, while what are now the provinces of Gelderland, Drente, and Overijssel became predominantly Saxon.

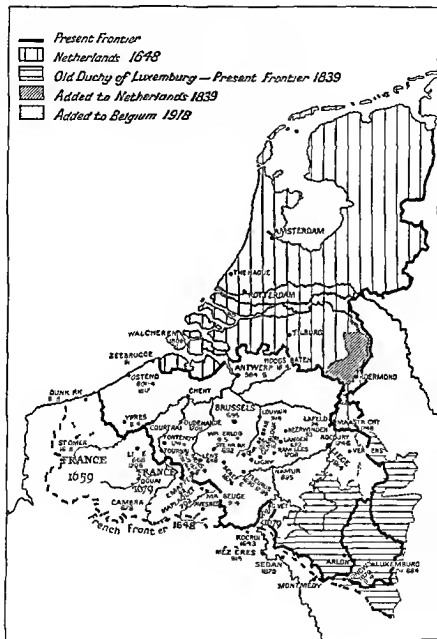


FIG 75—THE COCKPIT OF EUROPE  
Showing frontier oscillations

These Saxon-Frisian peoples eventually coalesced to form the Dutch in the north and the Flemings in the south.

By the sixteenth century these primitive peoples of the north had grown into a prosperous, intelligent people, much of the apparently worthless lagoon had been turned into productive polderland, and the erstwhile *terpen* had given place to wealthy cities. This progress was largely due to the change over from the Mediterranean to the Atlantic period of trade, following on the discovery of America and the Cape route to India.

Nominally a part of the Holy Roman Empire, the country actually enjoyed a large measure of independence, and had recently embraced the new doctrines of Protestantism without much opposition. On the abdication of the Emperor Charles V in 1555, the Netherlands (then including both the modern kingdom and Belgium) passed to his son Philip II of Spain. This ruler's attempt to stamp out Protestantism led to the establishment of the independent Dutch Republic as a result of the War of Independence between 1572 and 1608. The issue of this struggle between a small, though progressive, band of farmers, traders, and fishermen, and the most powerful empire of the day surprised Europe. It was rendered possible by the dour and indomitable bravery of the Dutch people, coupled with the natural defensive strength of their position, and a realisation of and intelligent use of the power of the sea; and finally gained by that grim determination to die rather than submit, which makes the sieges of Alkmaar, Haarlem, and Leyden imperishable chapters in the story of human valour and endurance—determination which led them, as at Leyden, to cut the dykes and flood their country that the Spaniard might not triumph. "Better to drown the land than lose it," said their leader, William the Silent.

Before the end of the struggle the south had parted company with the north. By race, religion, and temperament they were more likely to acquiesce in the Spanish rule, and the defensive strength of their position could not compare with that of the Netherlands. Parma triumphed, and Belgium had to wait 200 years before her freedom was recognised by the famous "scrap of paper."

But in the north Parma failed, and the treaty of 1648 gave Europe a new state

Thus in the sixteenth century the Dutch won their independence, largely through the sea, and through the sea in the seventeenth century they entered on their Golden Age.

The war left them with a large fleet and the consciousness of sea mastery, Amsterdam was "built on herrings," and from Amsterdam, from Texel, and from Hoorn the Dutch set out to open the oyster of the world. Barents won immortal fame as the pioneer of the North-east Passage, Schouten and Le Maire made the fourth circumnavigation of the globe, recording the name of their home for ever in the best known of all the world's promontories—Cape Horn, while Hartog and Houtman, Pelsaert and Nuyts mapped two-thirds of the Australian coast 150 years before Captain Cook sailed from Tilbury. In 1642, Abel Tasman set out from the great Dutch colony in Java on the voyage which placed Tasmania and New Zealand on the map. A little later New Amsterdam sprang up on Manhattan Island—the ancestor of New York—and South Africa, already associated with the ominous name of Vanderdecken, provided a home for the fore-runners of such men as Botha and Smuts. North America, South America, Asia, Africa, and Australia—the Dutchman has left his mark on them all.

This outburst of vigour and achievement was equalled, if not surpassed, by those who stayed at home. The Dutch artists of the seventeenth century represent perhaps the high-water mark of painting in Northern Europe. Men like Vermeer of Delft, Cuyp of Dordrecht, Rembrandt, and Dou of Leyden, turned out work of a quality which later ages have not surpassed, while the new University of Leyden, founded by William the Silent to commemorate the town's heroic defence, was for a century the leading seminary of Europe, numbering among its sons such men as the philosopher Arminius, and Grotius, the founder of International Law.

But the Netherlands was too small and the Dutch too few to maintain such a colossal effort. Hardly had she reached her zenith when she began to decline. The rising commercial



power of England challenged her supremacy, and with her superior numbers and greater resources England was bound to win. The three Anglo-Dutch wars made Tromp and de Ruyter immortal, but they ruined the Netherlands, and the exhausting struggle with Louis XIV sealed her fate. Once again, in 1674, another William of Orange saved his country by cutting the dykes as his famous ancestor had done a hundred years before. It was the last gleam of the heroic age. During the eighteenth century, some semblance of her power remained, but the disastrous war with England in 1781-3 revealed her weakness, and the Revolutionary and Napoleonic wars saw the Netherlands touch the lowest point of national impotence. Yoked in an unnatural union with Belgium by the Congress of Vienna, she struggled uneasily on until Belgian independence was recognised in 1839, and then the coming of the industrial age brought her a new, if less glorious, lease of life.

The glory has departed, but the memory remains in the almost mournful pride with which the Dutchman surveys the past. The thoughtful visitor to Leyden or Haarlem, Dordrecht or Delft, does not miss this feeling under the material attitude which, according to E. V. Lucas, makes up so much of modern life in the Netherlands, and is of importance in view of the common English tendency to view the Netherlands as a country in miniature attractive enough, but hardly to be taken seriously. The Dutch themselves are partly to blame for this, through commercialising the picturesque side of their life, as at Marken and Volendam, but even so, they keenly resent it, and after all it is childish to consider size the only criterion of importance. It is better to remember that she has a history of achievement in art, culture, and enterprise second to none in Europe, that her engineers and farmers enjoy a world-wide reputation, that she controls the most important strategic centre and commercial artery in Europe, that Amsterdam and Rotterdam rank among the world's greatest ports, that she is numbered among the ten chief trading nations of the world, and that she rules an empire of more than three-quarters of a million square miles.

Language — Dutch is a form of Low German. Down to the



sixteenth century there was considerable variety of dialect, but, as elsewhere, the invention of printing went far to standardise the language, which may be regarded as having been fixed by the Dutch Bible, issued before the close of the century. By this time Flemish had been evolved as a distinct form, and remained the tongue of the southern provinces after the north had gained its independence.

### BELGIUM

**Racial Origin.**—Julius Cæsar found the area which we call Belgium occupied by a number of closely related tribes known by the generic name of Belgæ. Of these the Nervii seem to have been the most important. Cæsar conquered these peoples, and under Augustus their country was organised as a part of the Empire with a series of strong frontier posts, first along the Waal and afterwards on the Rhine.

Towards the end of the third century there commenced the Frankish movement westwards, which ended in the Salian Franks under Clovis (481-511) taking practically all the land of the Belgæ. After the conversion of Clovis to Christianity, his followers rapidly followed his example, and by the end of the fifth century the South Netherlands held a definitely Christian people marching towards civilisation.

This mixture of Belgæ and Franks developed into the Walloon race, occupying the lowland districts of Hainault, Namur, South Brabant, and Liège. The people of the Ardennes *massif*, however, would seem mainly of Alpine stock; but no difference in culture and language exists to-day between them and their lowland compatriots. The coastal area, some time previously, had been occupied by the Frisians, who, farther north, formed the Dutch people by mixture with the Saxons, but who, in the south, developed along slightly different lines and ultimately formed the Flemish people, so providing the Belgium of to-day with her two races, the existence of which has been responsible for a more varied and richer natural life than would otherwise have existed.

The physical structure and lay-out of Belgium is widely

different from that of the Netherlands. The latter is essentially a stronghold at the entrance to a great highway, whereas Belgium is a cross-road, but, curiously enough, the two routes involved have not been equally important *at the same time*. The first important, and perhaps the greatest period in Belgian history, was that of the Middle Ages, during which her Dutch neighbours were still relatively backward.

From the earliest times the River Rhone has been a passage way from the Mediterranean to Northern Europe, the Gate of Burgundy functioning as a cross-road in the heart of the continent. From here two main routes strike northwards, the more obvious, that of the Rhine, before the sixteenth century presented greater difficulties, and led to a less productive region than that farther to the west, over the low plateau of Langres, through the Paris Basin, round the Ardennes, and so on to the plain of Brabant and Flanders. Here, at the termination of the great transcontinental route-way, a group of cities sprang up—Ypres, Furnes, Ghent, and Bruges being perhaps the chief.

A suitable climate, convenient sheep walks, and adequate *local* defensive possibilities provided the foundation for the great cloth industry—the first real manufacture of North-west Europe. From the thirteenth to the sixteenth century these Flemish cities enjoyed a prosperity and exhibited a vitality and exuberance of many-sided life only paralleled by the Lombard cities far away to the south.

Here, rather than in baronial halls or kingly courts, the culture of the medieval world found full expression. The Cloth Hall at Ypres, the belfry at Bruges, the old mansions at Furnes, and the cathedral of St. Bavon at Ghent showed the pride and skill with which these old burghers built their cities, painters like Memlinc, Gerard David, and the immortal Van Eycks founded a school whose influence virtually created art in North-west Europe, while at the height of her fame the port of Bruges was crowded with shipping from every port in Europe. Nor were the virile citizens incapable of holding their own in war, as they showed to the full in 1302, when the men of Bruges shattered the chivalry of France at the battle of the Golden Spurs.

Modern Belgium will never be understood unless the student fully realises the immense influence which the glory of the Flemish cities in their prime has had on their descendants in the desperate and humiliating centuries which Belgium afterwards endured.

Throughout their history, even in the darkest days, the Belgians never forgot that once they were the leaders of Western Europe. But for this memory Belgian nationality could not have been triumphantly established in the nineteenth century, and could not have endured the almost overwhelming attempt to crush it which the twentieth century has seen. When, in 1914, King Albert summoned his people once again to bar the path of the tyrant, it was by a proud reference to the battle of the Golden Spurs that he steeled his soldiers' hearts to conquer or to die.

With the discovery of America and the Cape route to India, the Middle Ages came to an end, and Europe's trading centre moved from the Mediterranean to the Atlantic. The Flemish cities were profoundly affected by this change. For some time the citizens of Bruges had viewed with alarm the continuous silting up of their estuary of the Zwin. Attempts were made to stave off the inevitable ruin by the creation of outports, but, by 1550, these efforts had definitely failed, and the trading supremacy passed, first to Antwerp, on the far superior waterway of the Scheldt, and later to the Dutch ports on the Rhine, which began to replace the western route as the highway into Europe. The remainder of the sixteenth century was occupied by the War of Independence, which left finally an exhausted Belgium in the hands of Spain. But Spain reaped no benefit from her partial success. Her day was over, and the seventeenth century saw the rise of new Powers whose ambitions gave a fresh turn to history.

We have seen that the Flemish cities developed their culture as the strongly placed terminus of a great north and south route. From the time of Richelieu onwards the antagonisms of the French and German peoples became more and more a dominant feature in European politics, and accordingly east and west routes assume an importance lacking in the Middle Ages. Between the

Alps and the Ardennes these routes are few and capable of sustained defence, but to the north the way lay clear between the impassable Ardennes highland and the low, often marshy maritime plain. In other words, the fatal weakness of Belgium is that, while to south and north her frontiers are as strong as need be, on the east and west she lies open and defenceless to the invader. And so for more than three centuries the men of the Netherlands, of England, of France, and of Germany tramped their iron way to victory or death upon the blood-soaked plains of Belgium. From the victory of Conde at Rocroi in 1643 to king-making Waterloo in 1815, Belgium, Spanish until 1713 and Austrian afterwards, was torn by the ambition of her powerful neighbours. No great captain, with the solitary exception of Frederick the Great, but increased or diminished his glory by marching, counter-marching, defending, or attacking in the fields of Flanders.

A new age dawned when, after the fall of Napoleon, the Congress of Vienna attempted to set a barrier between Frenchman and German by uniting the Low Countries into the Kingdom of the Netherlands. But the experiment was doomed to failure. In religious beliefs, in laws, and usages, in language, and in interests, the Belgic and Batavian provinces had little or nothing in common. The peoples were of different races with interests and feelings not merely different but opposed.

So, after less than twenty years of uneasy partnership, the French Revolution of 1830 started a movement which finally ended in the establishment of an independent Belgium in 1839 under the guarantee of the Great Powers.

During the next seventy-five years the country advanced steadily. Unlike the Dutchman with his seafaring tradition, the Belgian has always looked inland. It is common to relate this difference to the superiority of the Dutch coastline, but too much must not be made of this. The lack of material for an industrial life in the Netherlands contrasted with the mineral wealth of Belgium is of at least equal importance.

The discovery of coal, iron, and zinc in the great Sambre valley gave Belgium the chance of a vigorous industrial life,

which she has taken full advantage of; the textile tradition of Flanders, never quite lost even in the blackest days, has been developed on a scale rivalling that of the Middle Ages, while intensive cultivation of her soil has placed Belgium high in the list of agricultural countries. Towards the end of the nineteenth century she reached overseas, and the Belgian Congo shows that, if need be, the Belgian can work constructively even in the tropics.

Thus, by 1914, Belgium by utilisation of her natural resources had built up a more varied and better-balanced life than that of her neighbour to the north. But she could not eliminate the danger to which her position and nature as a great passage-way between two rival Powers exposed her, and her very existence as an independent country was dependent on the value which those nations attached to their plighted word.

In 1914 the blow fell; the German Government tore up the "scrap of paper," and Belgium entered on her four years' martyrdom. Since 1918, once again she has had to rebuild her country, ravaged in a strangers' quarrel, and once again, with patient, unremitting labour and sacrifice, she has built up her house anew.

**Language.**—The original Belgæ spoke a Celtic language, which was largely, if not entirely, replaced by Gallo-Roman after the invasion of the Latin people. Gallo-Roman became the basis of the tongue spoken south of the Waal, and the main source of the Walloon language (or dialect), which was finally assimilated by French in the fifteenth century. It is possible that, had printing been invented two centuries earlier, Walloon would have survived as a separate Romance tongue.

The Frisians of the coast district gradually evolved two related forms of the same language. In the north, Dutch developed from the union of Frisian and Saxon, while to the south, in what is now Belgium, Saxon influence was almost absent, and as a result by the sixteenth century Flemish had established itself as a distinct Teutonic language. It may be thus thought of as being, roughly, a variant of the true Dutch spoken farther to the north.

R. J. E.

## CHAPTER VIII

### SCANDINAVIA AND DENMARK

THE region known as Scandinavia is difficult to define. Structurally and physically, it would be confined to the peninsula known as Scandinavia, while ethnologically its boundaries are extended to include Denmark and Iceland. Hence, this wider area is best taken together. Where the two peninsulas, which form the greater part of the region, meet the mainland, there are no natural boundaries. The existing political boundaries between Norway and Sweden, on the one hand, and Finland, on the other, were not demarcated until a hundred years ago. The line follows the courses of the rivers Pasvig, Tana, and Tornea, but is of no strategic value or real geographical interest. The southern frontier of Denmark has fluctuated from time to time, the present line having been defined in 1920 by a commission set up in accordance with the Treaty of Versailles.

**Structure**—Geologically, the region consists of two parts. The first includes Norway, all of Sweden except the southern extremity, and most of Finland. Here the rocks belong to very ancient types, the whole peninsula consisting of a massive block, which has from earliest times proved strongly resistant to folding and earth movement. It is thought that this part of the region forms, together with the north of Scotland, and the whole of Iceland, the European remains of a primeval continent to which geologists have given the name of *Arctis*. The structure of the peninsula consists of three strips running north and south. On the east there is a low block, partly covered by glacial deposit and forming not only eastern Sweden, but also the floor of the Baltic. The western strip resembles the Highlands of Scotland, and is very rugged. Between the two runs a third strip known as the "glint." The whole mass has been worn down into a peneplain, and has been from time to time subjected to changes of level due

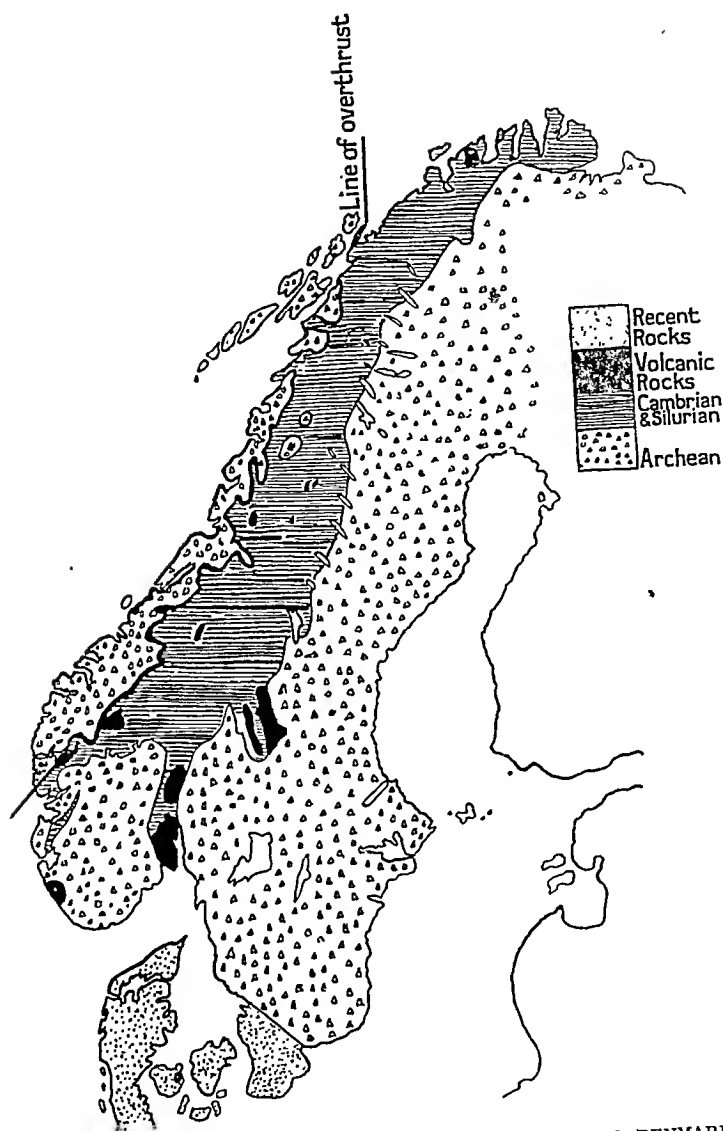


FIG. 77.—SIMPLIFIED GEOLOGICAL MAP OF SCANDINAVIA AND DENMARK.

to earth movement. Hence its surface is barren and rugged, and its coastline is broken by drowned valleys, and fringed with islands.

The second division of the region includes the southern extremity of Sweden, which is known as Schonen, and Denmark together with all its islands except Bornholm. This area is a northern extension of the Great European Plain, and is composed of the same Quaternary rocks. A belt of limestone runs through north-western Jutland and reappears across the Kattegat in Schonen. The marked differences between this latter district and the rest of Norway and Sweden are no doubt due to geological structure.

Norway and Sweden are not rich in minerals. Swedish iron is remarkably free from phosphorus, and ranks with the best in the world. The two principal districts in which the metal is found are the lake depression in south Sweden (Dannemora

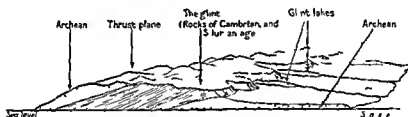


FIG. 78.—BLOCK DIAGRAM ACROSS SCANDINAVIA  
Showing the formation of glint lakes

and Grangesberg) and the district of Gellivare in north Sweden. In Norway, the ore is found chiefly near Arendal and Skien. Copper ore is also found in large quantities, chiefly in the lake depression (Fahlun and Westervik) in Sweden and near Roros in Norway. Zinc ore occurs in the lake depression to the north of Lake Wetter and in the neighbourhood of Stavanger. Unfortunately, coal is not found near iron deposits. It occurs in the carboniferous limestone of Schonen and to some extent on the north western coast of Norway. A certain amount of silver is found at Kongsberg in Norway and at Sala in Sweden.

An account of the geological structure of the region cannot be left without some mention of the work of ice during the ice ages. In those periods, the whole of Scandinavia, Denmark, and the western part of Russia were buried deep under ice, once at least, and perhaps successively. From some point to the east



of the present watershed the ice moved outwards in all directions, especially to the west and south-west, as witnessed by the Scandinavian boulders scattered along the east coast of England. Boulders of red granite from Sweden are found in the Norwegian river valleys and right down to the sea. Hence, the ice must have been forced right across the watershed of the peninsula, passing between the highest peaks of the highlands, which possibly rose above its surface as nunataks. In the forcible narrowing of its course, which took place in these regions, its erosive power would be accentuated, and hence, on the Swedish side of the ridge, it excavated rocky hollows, which, when the ice melted, remained as the upland lakes known as "glint lakes."

As the ice retreated, it left numerous bars of clay and gravel across the valleys, and the innumerable lakes and lakelets with which the low-lying parts of Sweden are dotted owe their existence in many cases to these glacial dams. Many of these have subsequently become peat mosses.

**Physical Features.**—Physically, the Scandinavian Peninsula may be said roughly to consist of three areas of drainage, as shown in Fig. 79, one slope facing west, another east, and the third south. The drainage areas, however, do not coincide with the physical divisions, for the water-partings do not always follow the line of highest ground. The western portion of the peninsula consists of a deeply trenched plateau, known as the

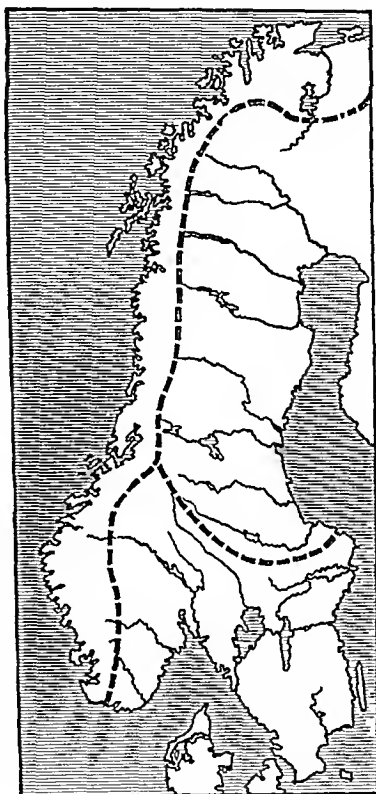


FIG. 79.—DRAINAGE SYSTEMS OF SCANDINAVIA.

High Fells, which is divided into two parts by the Trondhjem depression. The northern part bears the fanciful and mis

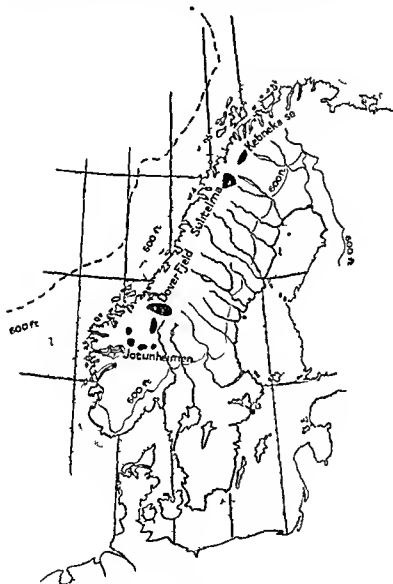


FIG. 80.—SIMPLIFIED RELIEF MAP OF SCANDINAVIA AND DENMARK.

leading name of Kiolen, from its supposed resemblance to the upturned keel of a boat. Individual peaks, which were probably

nunataks in the ice ages, rise to a height of some 7,000 feet and are well above the snow-line. Towards the north the height of the peaks is less. Throughout this part of the plateau glaciers occur, of which Svartisen is the largest, and reach down almost to the sea-level. On the plateau the higher ground is bare and glaciated, while the lower ground is covered with peat bogs.

South of the Trondhjem depression, the plateau becomes an irregular mass of highland, the separate parts of which bear individual names. The chief are Dovre Fjeld, Jotun Fjeld, and Hardanger Fjeld. In the Jotun Fjeld occur the two highest peaks in the peninsula, Galdhoppigen (8,400 feet) and Glittertind (8,370 feet). All these *massifs* reach the snow-line and are covered with eternal ice fields. Several rivers have cut deeply into this highland mass, forming dales which connect the lowlands of the Skagerrak with the west coast. Of these, Gudbrands Dale, which follows the Longen river, and East Dale, or valley of the Glommen, are the most important.

Towards the west, the country slopes steeply and ends in one of the most remarkable stretches of coastline to be found on the face of the earth. From Stavanger Fjord to the North Cape, a strip of coast-land, which is nowhere less than twenty, and in many parts more than fifty miles wide, is trenched in every direction with inlets from the sea. These combine the characters of small width, great length, profound depth, and loftiness of the intervening land. As a rule they are also shallowest at the mouth. Their local name of fjord has been applied to similar geographical features the world over.

According to Gregory, the fjords have originated as valleys formed along lines of fracture, which have subsequently been excavated by ice, or water following the lines of weakness thus produced. Subsequent foundering of land which once extended beyond the present coastline drowned these valleys. Differential movements caused the striking variations in depth found as the fjord is followed inland.

This explanation does not apply to the fjords, such as Tana Fjord, or Varanger Fjord, opening to the north, which are ordinary drowned estuaries or *rias*, deepening seawards. Neither

will it apply to the *fjorden* of Denmark or Schleswig Holstein. These are probably estuaries formed in recent rocks, and owe their present condition to a glacial diversion of the rivers, which once occupied them, followed by a subsidence letting in the waters of the Baltic.

The same causes which have produced the fjords are no doubt also responsible for the immense number of islands with which the coast is fringed. The combination of these two features profoundly affect both land and sea travel in the neighbourhood of the coast. Road travel along the coast is rendered impossible without continual ferrying, while sea travel inside the *skjærgaard* is not exposed to the hazards of the open sea, though in places the tides produce dangerous currents.

East of the High Fells is a lower terrace, known as the Forest Region. Unlike the western slope of the High Fells, which falls abruptly away into the sea, this area descends gradually to the Baltic. Crossed by many consequent streams, it contains the numerous glacial lakes already referred to. Along the coast lies a strip of lowland, which forms the only cultivated area in the north. An offshoot of the Forest Region forms the distinct of Smaland, while between the offshoot and the main area lies the lake depression, which has already been mentioned as rich in minerals. Highly glaciated and crossed by long, forested ridges of gravel known as *eskers*, this depression contains numerous lakes, of which Wener and Wetter are the biggest. In early times, a channel across the area connected the Baltic with the Kattegat, and the so called Lake Mälär is a survival of this former passage. Around the Smaland forest region lies a coast strip like that of northern Sweden.

The coast of Sweden is much less broken than that of Norway, though there is a strip on the eastern shore of the *Skagerrak* (Göteborg), another in the neighbourhood of Karlskrona, and a third farther north (Stockholm), which show a similar series of indentations and fringing islands. Many of these should, according to Gregory, be termed *fjards* rather than *fjords*, from which they differ in the low lying character of the land separating them.

The southern district of Schonen belongs structurally and physically to Denmark. The surface of Denmark is flat, and the land is so low that parts have been flooded by the sea. Hence, the eastern portion is divided into a group of islands, of which Zealand, Funen, Laaland, Falster, and Langeland are the chief. The three straits which pass between them, the Sound, the Great Belt, and the Little Belt, are of importance as giving access to the Baltic from the North Sea. The west coast of the Jutland Peninsula has a fringe of swamp, with sand dunes and barren heaths behind ; but the rest of the region is of gently undulating, fertile land. The coast is much indented with wide, intersecting channels, one of which, Lijm Fjord, cuts right through from the North Sea to the Baltic.

The rivers of the Scandinavian Peninsula fall into four groups. First, there are the rivers of Sweden, which rise in the Kiolen and descend as simple consequent streams to the Gulf of Bothnia. The northernmost of these, the Tornea, with its tributary the Muonio, forms the northern boundary of the country. These rivers mostly flow in wide open valleys, and in the greater number of cases either take their origin in mountain lakes, or flow through such lakes in the upper part of their course. These are the glacial lakes referred to above.

Secondly, there is a series of larger rivers flowing in a general southerly direction through the district of Gothland and the corresponding peninsula at the southern end of Norway. Such are the Klar, flowing through Lake Wener, and the systems of the Glommen and the Drammen. In most of these there are lakes of low level not very far removed from the sea.

Thirdly, there are numerous rivers on the west coast which, although the mountains approach very nearly to the sea, still have a greater length than might be expected, owing to the fact that they take a south-westerly direction instead of proceeding directly seaward. They also carry a considerable volume of water, owing to the heavier rainfall of the western side of the peninsula. Such are the Namsen, Vegsen, and Dunderline. Owing to their abrupt descent, they flow in narrow valleys and are interrupted by many waterfalls. The Lotefos, an elongated

cataract, and the Espelandsfos, a sheer fall which breaks into a mere veil of spray, so great is its height, are two of the best known of these

Fourth, and last, are a few rivers which find their way out into

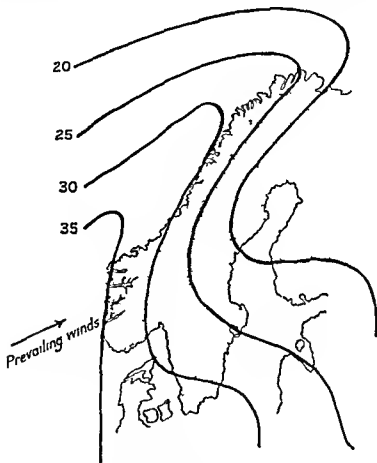


FIG. 81.—CLIMATE OF SCANDINAVIA AND DENMARK

*Winter and summer*

the Arctic Ocean, e.g. the Alten (opening into Alten Fjord) and the Tana. Some of these northerly rivers exhibit interesting examples of river capture and diversion.

Lake Lesjehogen above Romsdal is peculiar as a source of double drainage. It has one outlet to the west by way of a stream

called the Rauma; another to the east leads into Gudbrands Dale, and so by way of Lake Mjosen to Oslo Fjord.

**Climate.**—If the Scandinavian Peninsula is a physical unit, climatically it is sharply divided into two areas. The western and southern slopes of the region enjoy a maritime climate owing

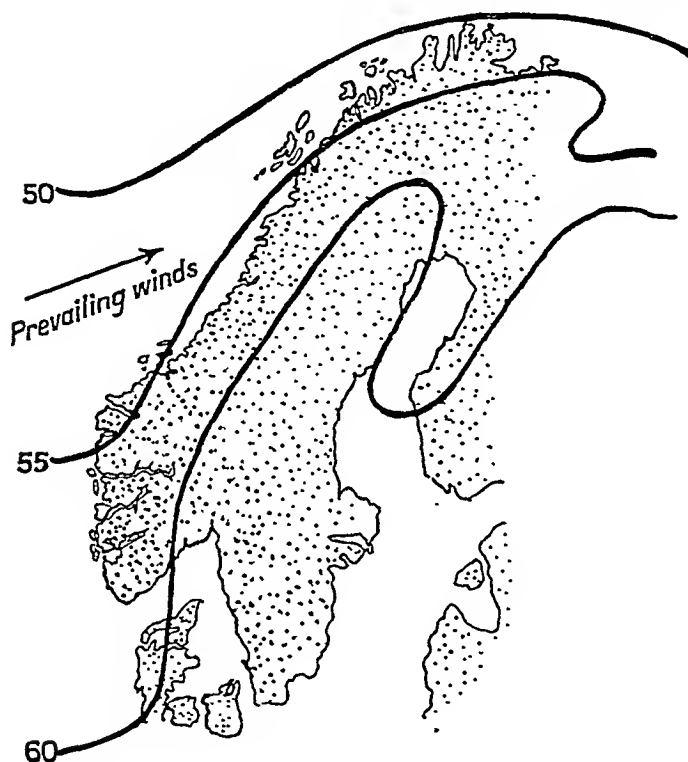


FIG. 82.—CLIMATE OF SCANDINAVIA AND DENMARK.  
Summer conditions.

to the prevailing south-westerly winds, which carry the moderating influence of the Gulf Stream Drift over the land. Thus, the waters of the fjords never freeze, although the glaciers from the High Fells sometimes descend close to the sea. Latitude, however, prevails over maritime influence to the extent of reducing the mean temperature a few degrees lower than on the west coast of the British Isles, and the climate as a whole belongs

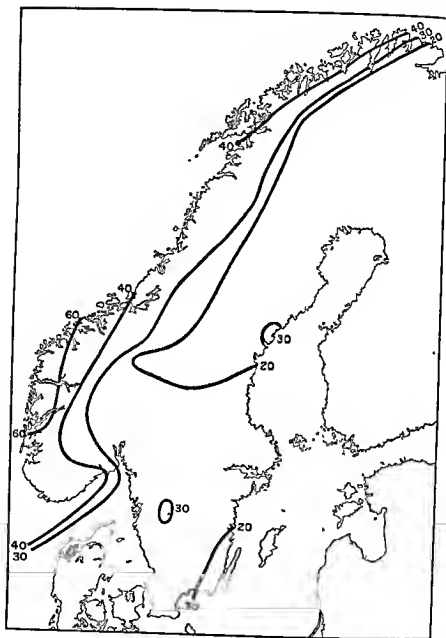


FIG. 83.—RAINFALL OF SCANDINAVIA AND DENMARK

to the cold maritime, rather than to the temperate maritime, variety. As in the British Isles, the winter isotherms have a



north and south trend in Norway, though in southern Sweden their direction is east and west. The January isotherm for  $30^{\circ}$  F. runs from Öslo to Ringvatso. Unlike those of the British Isles, the July isotherms in Norway have the same direction as in January, those in Sweden as before running east and west. Along the coast the mean annual temperature decreases slowly at first, but north of Trondhjem it falls more rapidly, reaching  $33^{\circ}$  F. at Vardo.

Like the British Isles, this part of the peninsula lies in the path of low-pressure systems originating in the Atlantic. The weather is, therefore, uncertain. The rainfall is high, both on account of the frequent arrival of rain-giving, low-pressure systems, and because of the rapid condensation of relief rains caused by the steep western face of the plateau. The rainfall is distributed throughout the year, though a maximum occurs in autumn, and precipitation usually takes the form of drizzle, accompanied as a rule by mist and fog.

// The eastern slopes, on the other hand, are robbed of the influence of the sea by the High Fells, which lie directly across the path of the prevailing winds. Here, therefore, the climate is of the continental type. The mean January temperature is nearly everywhere less than  $32^{\circ}$  F., while the July temperature is over  $60^{\circ}$  F., except in the extreme north. The gap in the highlands, which forms the lake depression, allows the sea influence to penetrate in some degree to the south of Sweden, and this district may be regarded as transitional. The annual isotherms have an east and west direction throughout the whole of the eastern slopes. At Stockholm the mean annual temperature is  $42.5^{\circ}$  F., at Umea it falls to  $35^{\circ}$  F., while at Haparanda, in the north coast of the Baltic, it is  $12^{\circ}$  F. The centre of Finmark forms a cold area, and Karajok (430 feet) and Kautokeino (866 feet), near the Finnish border, have a mean annual temperature of  $26.4^{\circ}$  F.

Rain falls chiefly in summer, and the small winter precipitation is usually in the form of snow. In winter, the shallow Gulf of Bothnia freezes over, often sufficiently to allow traffic to pass across it.

A comparison between the statistics of the eastern and western slopes bears out the foregoing remarks :

Bergen :	J	F.	M.	A.	M	J.	J.	A	S	O	N.	D	Range	Total
Temperature .	34	34	36	42	49	55	58	59	52	45	39	35	25	
Rainfall .	75	58	58	34	43	37	63	73	105	95	82	83	—	80.6
Trondhjem														
Temperature	26	26	31	39	46	54	57	56	49	41	34	28	31	
Rainfall	43	30	34	25	22	19	28	34	44	50	39	34	—	40.2
Stockholm .														
Temperature	27	26	30	38	48	57	62	59	53	43	35	29	35	
Rainfall	15	12	14	14	15	17	24	30	19	19	19	20	—	21.8

The table shows clearly that climatically Sweden really takes its place among the continental lands of Europe, while Norway ranks among the maritime group of Western Europe. The contrast between the eastern and western slopes of the plateau is most strongly marked by the rainfall figures.

Denmark is clearly a maritime district, and this applies to the neighbouring coasts of Sweden, including Schonen. But the sea influence is already weakening, and there is a marked absence of low-pressure systems with their disturbing effects on the weather. Hence, the rainfall, which is not aided by the relief, is low, ranging from 22 inches per annum in Zealand to 27 inches in West Jutland. The annual temperature is about 45° F. The mean annual isotherms run north and south in Denmark, but east and west in Schonen. In January, the isotherm for 30 cuts off the district of Schonen from the rest of Sweden. The western side of Denmark is much exposed in spring and early summer to cold winds from the north-west and to chilling sea mists.

**Vegetation.**—The region contains three well-marked vegetation areas : the beech area, the pine area, and the lichen area.

Forests of beech occupy the lowland of the south of the Scandinavian Peninsula, both in Gothland and in Norway, and the whole of Denmark. This is a continuation of the "park-land" vegetation of Western Europe. On the slopes of the plateau of Scandinavia, the deciduous forest is replaced by typical temperate forests of conifers. The chief species are the Scotch pine and the spruce. These range up to a height of 2,500–3,000 feet in

the south of Norway, and produce extensive forests over the northern part of Sweden, especially on the secondary plateau. Farther north their upper limit descends. It is about 1,600-2,000 feet in the neighbourhood of Trondhjem and descends to 700 feet at 70° N.

// Above the tree-line there is a region of dwarf birch which shades off into wide heaths. Finally, there is a lichenous region, characterised by reindeer moss, which extends up to the snow-line. Here the type of vegetation is alpine.

It is only the low-lying regions near the coast and in the southern parts that the forests have extensively given way to agriculture.

**Animals.**—The animals proper to the region afford examples of the protective adaptations designed to resist cold. The growth of a thick covering of hair or fur is the most general feature. The bear, the lynx, and the pine marten, which all have their homes in the dense upland forests that border the heaths of the plateau top, are the most conspicuous examples. Round the coasts occur several varieties of seals, the common seal and the gray seal being widely distributed. The harp seal, which is said to be destructive to fish in the northern regions, is also found, while the walrus is an occasional visitor to the northern shores. All these aquatic animals have a thick fur coat, but have developed further protective adaptations in the form of a resistant skin lined with blubber. The bear hibernates in winter—that is, it sinks into a kind of torpor, during which its system slows down and the active functions of animal life, such as feeding, are temporarily suspended. On the alpine heaths themselves occurs the lemming, a small, burrowing rodent which lives in colonies and feeds on roots. Driven by scarcity of food, the surplus members of a colony are sometimes forced to migrate, and travel on a broad front, crossing rivers, inlets of the sea, or other obstacles. During these movements they are preyed upon by a host of carnivorous animals.

The reindeer deserves a paragraph to itself. The wild reindeer is known in several regions of the upland forests and heaths, but is not found beyond the Swedish border. The creatures feed

upon the reindeer moss, and periodically migrate in large herds, usually led, it is said, by a female. In addition to these, there is a smaller variety which has been domesticated by the Lapps, whom it supplies with milk and other necessities of life. It has not, however, completely lost its migratory habit.

Along with the animals of speed like the reindeer must be classed the forest-wolf, the principal carnivore of the region.

An immense variety of sea birds inhabit the coasts. Among them is the eider duck, the down from whose nests is collected for commercial purposes. On the heaths several species of grouse are found, including the willow grouse and the ptarmigan. The last is interesting on account of its change of coat with the season, a device to protect itself from the view of enemies. Many of the sea birds are migratory.

**Agriculture**—Since the Scandinavian countries share the maritime climate of North west Europe, it may be expected that there will be similarity of agricultural products. This is generally speaking the case, but, while the products are essentially the same it will be found that the relative importance of the different branches of agriculture varies considerably according to localities.

The chief grain crops of Scandinavia are those common in most parts of North west Europe. In the wetter parts of the region i.e. Norway and western Sweden, oats are much the most important crop and are used both for human consumption and for live stock. Wheat is much restricted in its distribution, as neither soil nor climate is altogether suited to its growth. It is best grown in the districts round Lake Malar, and in the fertile strip of country round Malmö in the extreme south of Sweden. This, indeed, is the most highly productive agricultural land throughout Scandinavia. Rye and barley are hardy crops which can be grown almost anywhere in Scandinavia even as far north as Haparanda, at the head of the Gulf of Bothnia.

Of root crops, much the most important is the sugar beet. Both Sweden and Denmark have joined in the great modern development of this crop. It is specially suited to a region where live stock farming is an important branch of

agriculture, as the pulp left after the extraction of the sugar is an excellent cattle food.

The rearing of live stock is, however, the characteristic feature of farming throughout Scandinavia, and in southern Sweden and Denmark dairy farming and bacon curing have reached such a high standard that these small countries may justly claim to lead the world in these branches of the industry.

In the barren regions of the far north, the reindeer are the chief source of wealth to the nomadic Lapps, and even to some of the Swedish peasants of the forests of Norrland. Along the narrow strips of coast-land and on the alp-like ledges of the Norwegian fjords, the Norse peasantry carry on an interesting struggle with a soil which is often infertile and always meagre in extent. In this attractive fjord life, occupations characteristic of the Swiss valleys are combined with the fishing and crofting type of the west coast of Scotland. As in Switzerland, there is the subsidiary upland farm, or *saeter*, occupied only in the summer months, when the women make cheese and butter, and gather a scanty hay crop, which has to be transported down the steep slopes to the home farm. These upland pastures are almost always the common property of several families.

The great developments in the dairy industry throughout the world in the last fifty years are largely due to the example of energy, skill, and scientific spirit displayed by the farmers of Denmark and Sweden. The increasing competition of new countries in the grain markets of the world has led the people of Denmark and Sweden to concentrate on the scientific breeding of live stock, and on the attainment and maintenance of a high standard in dairying and bacon curing. This has been the joint achievement of enlightened Governments and of individual scientists and farmers, the latter working through their co-operative associations. By providing a splendid system of public technical education, and by the promotion of exhibitions, the Governments have done a very great deal, but the co-operative movement in dairying and other branches of

agriculture is the outstanding feature, and has been largely adopted in almost every civilised country except Great Britain

Co-operation on the Danish plan does not imply joint farming of the land. Throughout Scandinavia the actual farming is usually in the hands of individual farmers, who own their own farms. It is in the operations of buying, transport, and sale, and, above all, in the manufacture of butter and the curing of bacon that the co-operative principle is all important.

Almost every village has its co-operative dairy, in the management of which each farmer takes a share. He receives his share of the profits in proportion to his contributions of cream. In 1922, Denmark was first in the list of the butter-exporting countries of the world, and was second only to the United States in the export of cured bacon. Denmark has, in fact, become a vast dairy farm supplying the needs of the industrial regions of Germany and Great Britain.

**Forestry.**—Forested areas amount to more than 50 per cent of the area of Sweden, and about 21 per cent of that of Norway. In both countries, the industries of lumbering and its associated trades are of very great importance. The most valuable timber regions are in Norway, the valleys of the Glommen and Drammen, and the Trondhjem district, in Sweden, the districts lying between latitudes 60° N and 64° N.

Scandinavia is very well suited in almost every way for the lumbering trade. Splendid coniferous forests clothe the Norrland of Sweden. The long series of parallel rivers and lakes afford excellent means of transport and supplies of water-power. The heavy and bulky cargoes are carried by sea from the ports at the mouths of the rivers. Even the severity of the climate in winter helps the haulage of the felled logs to the river side.

Formerly, the value of the timber was in the supply of raw material for building, furniture, and other constructional purposes, but recent industrial developments have made the production of pulp and cellulose of almost equal importance. This change is accelerated by the fact that timber for pulping can be produced in a much shorter period than timber for constructional purposes.

Great as is the area under forest, it is much smaller than it used to be. Vigorous attempts are being made in Norway to reforest the west coast slopes. In Sweden, a large proportion of the forest lands are Crown property, and both on these lands, and on those of private owners, there is strict limitation as to the amount of felling which may be carried out annually. The felling is done usually by gangs working for the large saw-mill companies, which either own the forests, or lease the right of felling from the Crown or private owners.

Felling is carried out in the winter months for several reasons. The timber is then in the best condition for cutting, when the sap has ceased to run; the snow makes haulage easy; and it is in winter that there is the largest supply of labour. When the rivers thaw in spring, the logs are floated down to the saw-mills and factories on the coast. The Angermann alone floats four million logs annually. Along the east coast of Sweden, from Gefle to Haparanda, there is a whole series of towns given over entirely to the timber trade.

**Fisheries.**—In the fishing industry, Norway easily takes the leading place among the Scandinavian countries, and there is probably no civilised people among whom fishing plays so important a part in economic life. Fishing employs nearly 100,000 men, and, along with forestry, constitutes the chief wealth of the country. On the barren west and north coasts it may be truly said that the sea feeds the land. Fish even form part of the winter fodder of the horses and cattle in some parts.

Up till the end of the nineteenth century, the fisheries were mainly confined to the coasts, but now there is a large fleet of steam fishing craft engaged on distant banks. In addition to these, there is a large whaling fleet, which operates throughout the length and breadth of the Atlantic from Spitzbergen to South Georgia. In 1920, Norwegians produced more than 50 per cent. of the world's output of whale oil.

The coastal fisheries, however, still remain the most important branch of the industry. The cod fishery is the most valuable as regards both the quantity and the by-products. It begins off the Lofoten Islands in March and ends off Finmark in late

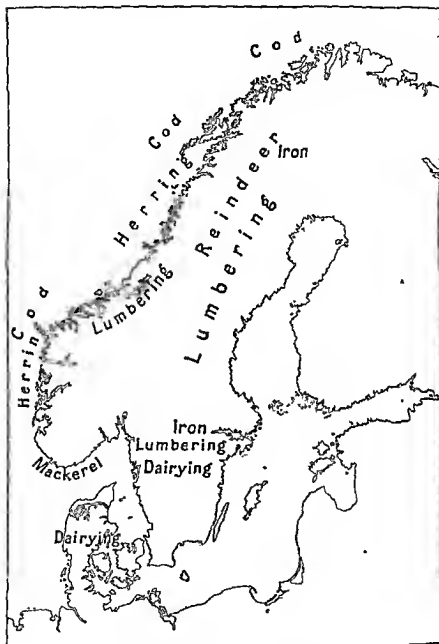


FIG 84.—NATURAL PRODUCTS OF SCANDINAVIA

May. The fish are either salted or dried and are exported in great numbers, especially to Spain. From the offal, guano, fish-



meal, and cod-liver oil are prepared. The proximity of ice and timber is a great assistance in the packing operations. The chief centres are the Lofoten Islands and Tromsø and Hammerfest on the mainland. The latter town has also a considerable trade in eider down and reindeer hides.

The herring season begins in spring on the coasts near Bergen, and works northward till the autumn. Farther south the mackerel and salmon fisheries are important inshore. Bergen and Aalesund are the chief centres in the south; and Bergen is the head-quarters of the Government Fisheries Department.

Denmark shares to a certain extent in the fisheries of the North Sea, but her fishing fleet is very much smaller than that of Norway. In the enclosed waters of the Lijm Fjord, however, an interesting fishery has developed. The whole fjord has been converted into a vast fish pond, into which young plaice from the North Sea are put. When these are sufficiently grown, they are kept in great floating cages until they are wanted for sale. The chief fish market is Esbjerg, on the west coast.

The fisheries of Sweden are also much less important than those of Norway. During the Middle Ages, there was a very thriving herring fishery off the coast of Schonen, but it has now lost much of its importance.

**Mineral Wealth.**—Scandinavia cannot be said to be rich in minerals. The most important mineral product is the Swedish iron, and the Swedish production barely amounts to one per cent. of the world's output. Denmark has no minerals of importance, and, except for the copper of Røros, Norway contributes little to the mineral wealth of the world.

The Swedish iron trade, however, is of very considerable importance, because, although the quantity produced is not great, the quality is very good indeed. The two great centres of production are widely separated. In the far north, there are the large deposits of Kirunavare, Luossavare, and Gellivare. The ore lies in beds which are sometimes of great thickness, and it contains a percentage of iron far above that which is usual in iron-ore. The chief disadvantage of this field has been its remoteness, but, since 1903, the construction of the railway from

Lulea to Narvik, on the Norwegian coast, has given these districts access to a seaport which is free of ice throughout the year.

The second great iron district is in central Sweden, between Lake Wener and the Gulf of Bothnia. Here there are many important mining towns, such as Grangesberg and Dannemora. The thickness of the deposits in this region is usually much less than is the case in the northern region, but the area over which mining is carried out is very much more extensive. The ores of the central Swedish region are usually very free from phosphorus.

As might be expected, the smelting of iron and the development of iron and steel industries is almost entirely confined to central Sweden. From the northern region the iron is exported in the form of ore.

Other important mineral products are the coal of Schonen and the copper of Fahlun, but they are of small importance in comparison with the production of iron.

**Industrial Power.**—In spite of the fact that they are not rich in coal, Norway and Sweden have always had abundant supplies of power for industrial purposes. In former times, the great forest lands supplied all the fuel that was required, and the use of charcoal in the past accounts for the former importance of Sweden in iron smelting (cf. the early English iron industry of the Weald). Charcoal is still used for this purpose, and pig-iron produced with this fuel is very much better than that produced with coal.

Except in the manufacture of pig-iron, however, hydro-electric power is much the most important source of industrial power in Scandinavia. In 1925, Norway had developed more power per head of population than any other country in the world, and was followed by Switzerland, Canada, U.S.A., and Sweden. In the total amount of hydro-electric power installed, Norway came fourth among the different countries of the world, while Sweden was eighth<sup>1</sup>. In both countries, the total of power developed is only a fraction of what is available if industrial requirements demand an increase. In Norway, the largest power stations are in the Drammen valley, and in Sweden, at the famous Trollhatten Falls, below Lake Wener.

<sup>1</sup> See p. 166

**Manufactures.**—The location of the manufacturing industries is determined chiefly by considerations of transport facilities and supplies of power. The industrial regions are, therefore, situated along the coasts or in the lowlands, and especially in the Central Lowlands of Sweden. Arising from the great wealth of timber resources are many industries, such as the manufacture of pulp, paper, matches, and cellulose. The hardware and textile centres are mainly in central Sweden, in towns such as Örebro, Eskilstuna, Linköping, and Norrköping. The electro-chemical industry is a recent development of importance in Norway. Shipbuilding is important in all three countries. Among European countries in 1924, Denmark was fifth, Sweden seventh, and Norway eighth in the tonnage of ships launched.

**Shipping.**—In considering the economic geography of the Scandinavian countries, it must always be remembered that the wealth of these countries does not consist only in the goods which they produce, either for home consumption or for export. As in the case of the English, geographical circumstances have made it almost inevitable that throughout their history the Danes, Swedes, and Norwegians should be great seafaring nations. As seamen they have few superiors, and the size of the merchant fleets is very great in proportion to the total population. In the list of the world's merchant fleets in 1925, Norway took the seventh place, Sweden ninth, and Denmark tenth.

The following are the chief imports and exports of each country in 1922 :

## DENMARK

Exports.	£ millions.	Imports.	£ millions.
Dairy produce . . .	18·8	Textiles . . .	10·9
Bacon, meat . . .	17·1	Grain and pulses . . .	7·5
Eggs . . .	5·4	Coal, mineral oils . . .	6·7
Live stock . . .	2·2	Fodder and feeding stuffs . . .	5·0
		Iron and manufactures . . .	5·0

## NORWAY

Paper and manufactures . . .	9·8	Vehicles, machinery . . .	6·8
Meat and animal products . . .	6·6	Cereals, flour, etc. . .	5·8
Metals and minerals . . .	5·8	Textiles . . .	5·4
Timber and wood products . . .	3·0	Minerals . . .	4·3

## SWEDEN

Exports	£ millions	Imports	£ millions
Wood pulp, paper, etc.	18.7	Textiles	8.9
Timber	17.3	Minerals	8.7
Metals and minerals	11.1	Vehicles, machinery, etc.	5.9
Vehicles, machinery, etc.	7.7	Metals	5.6

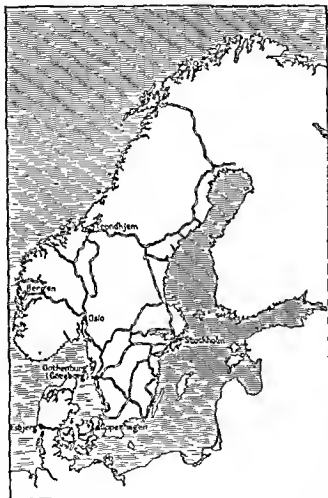


FIG. 85.—COMMUNICATIONS AND TOWNS OF SCANDINAVIA

Communications.—In spite of obvious difficulties, the Scandinavian countries are well served with railways. The great barrier of mountains is crossed in five places. The most northerly railway in the world connects Narvik in Norway with Lulea on the Gulf of Bothnia, and with the great north-south trunk line of Sweden. This Swedish line is also connected with Trondhjem by a line

which crosses from a point near Sundsvall on the Baltic. Two lines connect Trondhjem with Oslo, and perhaps the most important line of all links Oslo with the western port of Bergen. In Denmark, railways follow the east and west coasts of Jutland,

and an important line runs from Esbjerg on the west coast to Fredericia, and, by train ferries across the Belts, to Copenhagen. In Sweden, there are no serious obstacles to railway construction, and there is here a greater mileage of railway per head of population than in any other European country.

Inland water transport suffers everywhere from interruption in winter. The rivers are seldom navigable, but the lakes are of great use, and the important Göta canal links Göteborg with Stockholm via the lakes.

Coastwise traffic is greatly helped by the shelter of the almost unbroken lines of islands along the coasts, and there are innumerable natural harbours, except on the North Sea coasts of Denmark. The Swedish ports, however, suffer in comparison with those of Norway and Denmark on account of climatic conditions. No port on the east coast of Sweden is entirely free from interruption on account of ice, and navigation in the Gulf of Bothnia is impossible from December to April. The chief commercial ports of Scandinavia are : Bergen and Oslo, Esbjerg and Copenhagen, Helsingborg, Göteborg, Malmö, and Stockholm.

### TOWNS

Norway.—The importance of the sea in Norwegian life is illustrated by the fact that, with the exception of the mining towns of Kongsberg and Røros, every Norwegian town of importance is situated on the sea. On the west coast, apart from the fishing centres, the chief towns are Bergen and Trondhjem. The importance of Trondhjem goes far back to the earliest days of Norse history, when the fjord coast was the real centre of Norwegian life. It is the natural centre of the west coast, and the recent construction of railways has revived the prosperity of the old capital, so that it is now the third city of Norway. Bergen has had a more continuous history. Its importance in Viking times was due to its defensible position on a small peninsula, and to the fact that it lay between the Viking centres of the Sogne and Hardanger fjords. The old Hansa House shows its importance in medieval times, and it is to-day the centre of Norwegian shipping and tourist interests.

The towns of the Skagerrak coast are all engaged in the characteristic Norwegian industries of fishing and timber. Oslo, the modern capital, overshadows them all in importance. Although founded in the eleventh century, the city is essentially modern and has grown greatly in the last hundred years. By the end of the Middle Ages, it had become the chief city of Norway, and its steady growth at the expense of Trondhjem marks the change from the restless times of the Vikings to those of settled life on the lower lands of the south-east.

**Denmark.**—The towns of Denmark are almost all route centres, and the capital, Copenhagen ("The Merchants' Haven") is a good example of the importance of a position which dominates trade routes. Roskilde, the old capital, is also situated on Zealand, but in a remote position at the head of a long inlet. Copenhagen, in a more exposed situation, but on the great trade route of the Sound, is in a position to dominate all the trade of the Baltic, while it is also in easy communication with Malmö in Sweden. It has become the great entrepôt of Baltic trade, and is much the largest city in Scandinavia, in spite of the fact that the total population of Denmark is less than half of that of Sweden.

**Sweden.**—In northern Sweden, as in Norway, the only towns of importance are seaports, with the exception of the mining town of Gällivare. From Haparanda to Gefle there is a long series of timber ports at the mouths of the rivers, which bring the timber from the forests of the interior.

In the industrial region of central Sweden, however, there are many considerable inland towns, which owe their importance to mineral wealth, to water power, or to nodal positions in the system of communications. Towns engaged in industries connected with agriculture are concentrated in the very fertile district round Malmö.

Among the seaports of the southern coasts Göteborg is of great importance as the western port of Sweden, which is free of ice when the eastern ports are closed. It is the second city of Sweden. Malmö is obviously a ferry port of the Dover-Calais type. The head-quarters of the Swedish navy are at Karlskrona.

Stockholm is undoubtedly one of the most beautiful cities in Europe. As it is situated on a group of islands, it has been called "the Venice of the North," but the superficial resemblance is misleading. Venice was a point of refuge, and its safety consisted in its inaccessibility. Stockholm lies far inland at the head of a long sea inlet, and at a point where the waters of Lake Mälaren flow to the sea by a short length of river. It engages in a great variety of trades, among which engineering and shipbuilding are the most important. Its excellent harbour has a large share of Swedish shipping. Its predecessors as capitals of the country were situated on the shores of Lake Mälaren, but in the thirteenth century the decrease in piracy, and the growing volume of Baltic trade, led to the establishment of Stockholm as the chief city of Sweden. It did not become the capital until modern times. It is interesting to note the changes in the location of the capitals of all three Scandinavian States. In each case, a more remote and defensible position has been abandoned for one more capable of sharing in the developing trade of the Baltic.

**Race.**—During the rigours of the Ice Age, life could not be supported in the Scandinavian region, but with the coming of milder conditions there appeared on the Baltic tall, long-headed people. Some anthropologists have argued that the Baltic was the original home of these early members of the Nordic race, but more probably they moved westward from an original home on the Aral-Caspian steppe. Certainly the Baltic coasts were their second area of characterisation, and thence the true Nordics have moved inland to occupy most of the Scandinavian peninsulas, as well as the northern plain of Germany, Northern France, and England. It is probably safe to say that the Nordics arrived in Denmark in the early Neolithic period, passed into Sweden in the later Neolithic period, and occupied the fjords of Norway about 500 B.C. Since then Denmark, Sweden, and Norway have been predominantly Nordic, the purest representatives of the race being found now in the interior of the Scandinavian Peninsula.

They are a people specialised to live in a cold and hard climate—tall, strongly built, and muscular. Their heads are long in

comparison with their breadth, and their noses are long and narrow. In conditions that do not favour pigmentation, they have fair hair, reddish white skins, and blue eyes.

In both northern and southern extremities of the region, these people have mixed with shorter, darker, and broad-headed stocks. In Denmark, indeed, where the earliest arrivals would seem to have been representatives of the Alpine race, who advanced along the northern edge of the hills from the south-east, there is a very mixed population. The same element is observable in southern and western Norway. It is, however, the Lapps and Finns, members of the Mongolian stock, who have modified the Nordic population in northern Sweden, where, as in the south, there lives a shorter, darker, and more broad-headed people.

**Scandinavia in History.**—Scandinavia has been taken as a single region, because in spite of the fact that it has almost always been divided politically, community of race and a general similarity of geographical conditions have imposed a marked unity upon the region. Throughout its history, there have always tended to be three great political groups, roughly corresponding to the present States of Norway, Sweden, and Denmark, and there can be no doubt that the persistent influence of geographical factors has largely brought about the emergence of these three national States, closely akin in race and language.

A point of supreme importance in the historical geography of the region is that the resources of the land have never been sufficient to meet the requirements of so vigorous a people. The result has been that the Scandinavian peoples have played at times a very important part in human history. Even when their activities were apparently limited to destruction, their influence really made for the invigoration and progress of those peoples with whom they came in contact. The leadership of Scandinavia was held by each of the three nations at different periods, but whichever was in the ascendancy there has never been a time when the activities of these small States were unimportant in human affairs.

**The Viking Age.**—The first great period in Scandinavian



history is the Viking Age. Strictly speaking, this phrase is best applied to the period from A.D. 789, when the Norsemen first appeared on the coasts of England, to the time when the foundation of Normandy, in the treaty of Clair-sur-Epte, in A.D. 911, opened a new era. But the period may reasonably be extended to include the earlier activities of the Angles, Saxons, and Jutes, and it does not really close till the Battle of Largs, in A.D. 1263, when the Norwegians lost their hold upon Scotland.

It is impossible to discover the causes of this epoch-making restlessness among the peoples living on the shores of the Baltic and the North Sea. It seems to be a part of the great folk movements which shook all Europe in the Dark Ages. Undoubtedly the immediate cause of many a raid was the growth of power on the part of some local chief at the expense of weaker neighbours, who sought compensation for their defeat overseas. The limited resources of the region also act as a permanent cause of overpopulation and consequent migration, but it is difficult to say why the movement was particularly marked at one period of history.

The earlier migrations were from Jutland and the Schleswig-Holstein region. The Angles, Saxons, and Jutes moved across the North Sea and established themselves in England, driving the earlier inhabitants westward into the more inaccessible and less desirable parts of Britain. Thus was laid the foundation of that England, which in its turn became the greatest colonising force that history has ever witnessed.

The true Viking movements came some centuries later and did not at first consist in the migration of whole populations. The centres from which they sprang appear to have been the Norwegian and Swedish coasts. While Ruric and his fellow-Swedes passed across the Baltic and established a power, which became the nucleus of the Russian Empire, the Norsemen put out from their fjords on the long series of devastating raids, which left a trail of ruin and desolation on every coast of Western Europe.

At first the early history of Norway appears to be little more than a period of chaotic domestic strife in the homeland, and of

bloodthirsty and destructive raids overseas. Gradually, however, new developments began to take place. At home, the strength and vigour of some outstanding characters hammered out a certain degree of political unity. The civilising influence of Christianity, introduced by methods which were sometimes neither civilised nor Christian, began to lay the foundations of settled life. Thus, Gorm the Old united Denmark in the early tenth century, and his successor, Cnut, established an effective, but short-lived, empire, which included England and Norway. Norway and Sweden were similarly reduced to political stability by Harald Haarfager and Eric Edmundson. Magnus III of Norway (1093-1103) extended his rule over the Hebrides and part of Ireland.

A change also took place in the character of the overseas raiders. While some incurably restless and adventurous spirits still

In the skirts of Norway here and there  
Sharped up a list of lawless resolute

and opened the way to Iceland, Greenland, and America, others began to settle down in the lands which they had harried for so long. Thus originated the Danelagh in England, and, even more important, the duchy of Normandy in France. From Normandy and Norman England, the same restless energy found vent in the Crusades, and in the establishment of still more kingdoms in the Mediterranean.

Everywhere this remarkable people showed unbounded vitality, restless energy, and a very great capacity for organisation and government. They left a lasting mark upon Western Europe. The rise of the feudal system was largely a reaction against the threat of their conquests. In spite of its bloodshed and cruelty, the Viking Age was heroic, with a noble literature, and an inspiring record of astonishing achievements.

The Middle Ages — The Viking Age may be regarded as the period in which the Norwegians played the leading role among the Scandinavian peoples. In the Middle Ages, that part was taken by Denmark. This small State was able to profit by its geographical situation to such an extent that at times it dominated

the whole Scandinavian and Baltic region. The rich fisheries of the Schonen coast and the early stirrings of trade in the northern seas were at the mercy of the power which controlled the passes between Jutland and the Swedish coasts.

That Denmark was able to impose her will upon these regions for so long was, however, partly the result of historical rather than geographical causes. Her authority inevitably waned with the slow growth of the great continental Powers of Russia and Germany. Even at the height of her greatness, her ascendancy was never complete. Only Norway and southern Sweden were under her control throughout the Middle Ages. The allegiance of Sweden was very fitful, and the landward frontier in the Schleswig-Holstein region was constantly in dispute.

The whole period is one of almost incessant warfare. The short-lived empire of Cnut was followed by a long period of internal weakness, from which there emerged the strong kingdom of the reign of Margaret (1378-1412). The vigorous rule of this sovereign resulted in the Union of Kalmar in 1397, when the three Scandinavian Powers were united under her rule. At the same time Denmark established the right to levy toll on all ships passing through the Sound. The very completeness of this ascendancy, however, brought about its own downfall. Sweden never willingly acquiesced in the Union, and she found a powerful ally in the trading cities of the German coasts.

The loose federation of trading cities, known as the Hanseatic League, is one of the most interesting features in the history of medieval Europe. Northern trade naturally grouped itself into a Baltic and a North Sea region. In the Baltic, the towns of Wisby in Gothland, and Lubeck assumed the leadership. Their merchants carried on trade far into the wilderness of the Russian forests. In the west, the chief cities were Hamburg, Bremen, and Cologne. The importance of communication between these two regions, either by sea, or across the neck of land between Hamburg and Lubeck, and the threat to these routes by Denmark, led to the formation of the Hanseatic League. Almost equally important was the control of the valuable herring fisheries off the

Schonen coast The League was at one time sufficiently strong to impose on Denmark the humiliating Treaty of Stralsund, by which the Hansa towns garrisoned fortresses in Schonen, controlled the fisheries and were given a right of veto in the election of the Danish kings The power of the League was, however, short-lived It was only held together by commercial interests, and it suffered from the effects of two unexpected developments entirely beyond its control The voyages of Columbus and da Gama led to the complete rearrangement of the trade routes of the world, and the herring, with a sublime disregard for human legislation, abandoned the coast of Schonen in favour of the Dutch coasts about the middle of the fifteenth century

In the sixteenth century, Denmark again held a position of great political importance, although Sweden was no longer bound by the Union of Kalmar In the Reformation, the Danish Crown threw in its lot with the Protestant Powers, and became greatly enriched by the confiscation of Church property This wealth was used largely to establish a strong Danish navy, which carried out an effective policing of the Baltic and the North Sea Ships of other nations were obliged to salute the ships of Denmark in the northern seas The power of the Hanseatic League had dwindled, Holland and England were at grips with Spain The Danish king even mediated between the Emperor Charles V and Saxony Denmark had not only regained the hegemony of Scandinavia, but played a leading rôle in the politics of Central Europe

Towards the end of the sixteenth century, however, a period of decline set in The weakness was due to political and social causes As the greatest contemporary said, something was rotten in the state of Denmark New Powers were rising, and the succeeding centuries saw an almost complete partition of the country, in which the last event was the loss of Schleswig-Holstein to Prussia in 1864

The Rise of Sweden—The decline of Danish power in the seventeenth century was all the more marked because, in the same period, there took place the remarkable rise of Sweden to a height of influence in European affairs which has never

been reached by any Scandinavian Power since that time. The causes of Swedish greatness were, however, not geographical. It was due almost entirely to the ability and energy of a very remarkable succession of rulers. Geography, however, did play an important part in the long struggles of this period, for the Baltic emerges as the natural boundary of Sweden, in that it proved a defensible frontier and an obstacle to continental expansion. As in the cases of Norway and Denmark, the comparative poverty of the home country made it impossible to retain the conquests of its rulers on the southern shores of the Baltic.

The Swedish kings, like the Danish, built their power on the wealth of the confiscated property of the Church at the time of the Reformation. They were also greatly helped by the strong patriotism of the Swedish peasantry, whose devoted loyalty to the House of Vasa repaid the wisdom of its rulers.

The expansion of Sweden in the Baltic provinces of Germany began with the partition of the lands of the Teutonic Knights. This was a Crusading Order established to combat the Slavs in eastern Germany, but it had lost all authority and power with the rise of the states of Poland and Russia. Thus began a series of warlike enterprises in which the continental power of Sweden was extended to include almost all the lands bordering on the Baltic from Finland to Schleswig, as well as the important town of Bremen at the mouth of the Weser. Sweden had thus practical control of all the trade of the North German coasts, and used her position to levy tolls on trade throughout the region.

The greatest political achievements of Sweden were under the famous ruler and soldier Gustavus Adolphus. Under him Sweden became the all-important power in the terrible religious struggles of the Thirty Years War. Throughout the seventeenth century, Sweden was the recognised leader of Protestant Europe. The widespread territorial gains of Gustavus Adolphus were thrown away by the recklessness of Charles XII, but it is doubtful if so small a state as Sweden could ever have maintained these conquests in face of the rising Powers of Russia and Prussia. Gradually province after province was lost, until the political

frontiers of Sweden began to approximate to her natural boundaries

**Modern Times**—In the Napoleonic Wars, the Scandinavian Powers played only a subordinate part. The position of Denmark and the importance of her fleet made it inevitable that she should be involved in the conflict, and led to the bombardment of Copenhagen by the British fleet. In 1814, at the Congress of Vienna, the Powers transferred Norway from Denmark to Sweden, without regard for the wishes of the Norwegians. This was in compensation for the cession of Finland by Sweden to Russia. The uneasy union of Norway and Sweden lasted for nearly a century, but finally it was peacefully dissolved, and Norway at last became mistress of her own affairs in 1905. This event is interesting because the cause of dispute was connected with the divergent interests of the two countries. Sweden is agricultural and industrial, while Norway is seafaring and commercial. The controversy which led to the final dissolution of the union was the demand of Norway to have her own consuls in foreign cities, so that her commercial interests might be more effectively guarded.

The nineteenth century in Scandinavia was an era of peace in comparison with its previous history. The different states turned their attention to the arts of peace, and steadily advanced in prosperity. The kingdom of Denmark, however, did not entirely escape, and in 1864 a short war with Austria and Prussia deprived her of Schleswig Holstein.

During the Great War, the Scandinavian countries successfully maintained their neutrality, but their shipping suffered very severely in the submarine campaigns of Germany. At the Treaty of Versailles, the question of the frontiers of Denmark was raised, and plebiscites were held in Schleswig. As a result of these, the frontier was moved southwards considerably, so that it now includes the town of Tondern, but not that of Flensburg. The frontier now corresponds roughly to the linguistic boundaries between Germans and Danes.

The Scandinavian countries joined the League of Nations, and have given conspicuous proof of their loyalty to its principles.

in the devoted services of Dr. Nansen and in the loyal acceptance by Sweden of an adverse decision as to the political status of the Aland Islands.

**Population.**—The population of Scandinavia is very unevenly distributed. The great mass of high land in the north is practically uninhabited, and such inhabitants as there are follow

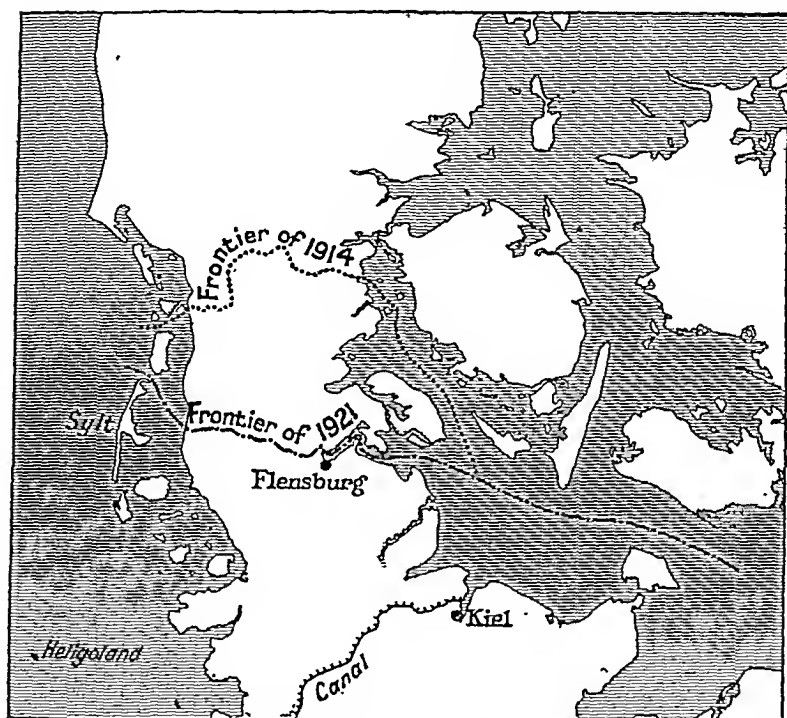


FIG. 86.—DANISH-GERMAN FRONTIER.

Showing the changes made according to the articles of the Treaty of Versailles in 1919.

nomadic ways of life with their herds of reindeer. The regions of denser population are : the Danish Islands, Eastern Jutland, the coasts of the Skagerrak and Kattegat, and the Central Lowland of Sweden. In recent years, the growing industrialism of all three states has led to a marked movement from the rural to the urban districts.

During the nineteenth century, there was very considerable

emigration from all the Scandinavian lands, but this has fallen off lately. The United States and Canada took the great majority of these emigrants.

The constitutional systems of all three states are very similar to one another. They are all constitutional monarchies, and in each the political position of women is on an equality with that of men. The religion of the overwhelming majority is Lutheran Protestant, and the churches have considerable powers in the excellent educational systems.

An interesting point has been made that the seafaring nations of Europe have been more ready than others to adopt Protestantism, and that among them also the social and political status of women is always very high. Such a generalisation must be taken with reserve. It should be noted that the seafaring peoples are also mostly Teutonic, and the causes of their social and religious characteristics may be racial as well as geographical. It is a curious fact that, while nearly all the great fishing populations of Europe are Protestant, they find their best market among the Roman Catholic peoples.

In spite of their political divisions, the Scandinavian states undoubtedly recognise that they have many interests in common, and their foreign policy is often united as the result of common agreement. This was very marked in the Great War, when common dangers and difficulties drew them together. By mutual agreement the long natural land frontier of Norway and Sweden has been left unfortified by either state.

**Colonies**—All three states have in the past held colonial possessions. Sweden took part in the early colonisation of the Atlantic seaboard of North America, but her small settlements in New Jersey were unable to maintain their hold against the hostility of the Dutch and English. The Norwegian claim to Spitsbergen has been recognised in recent years. This group of islands in the Far North has in the past been coveted by France, England, and Sweden on account of its important whale fisheries. Recently the discovery of important coal seams has greatly added to its value. Norway has undoubtedly been connected with the islands more closely than any other Power. She has



erected wireless and meteorological stations there, and has maintained regular steamship service with Spitsbergen since 1911. Two of the largest coalfields are in Norwegian hands. After the Great War, it was agreed between Norway and the Allied and Associated Powers that the islands should be recognised as Norwegian territory with certain reservations. The chief of these is that no naval base may be established there and no use may be made of Spitsbergen in time of war.

Apart from Spitsbergen, the only Scandinavian colonies are those of Denmark, and even these are of little importance. Recently the three small Danish Virgin Islands in the West Indies were sold to the U.S.A. Part of this transaction was the renunciation by the U.S.A. of all claims on the coasts of Greenland.

Greenland is a vast island plateau almost entirely masked by fields of ice and snow. Only on the west coast is there a meagre tundra land, where a few settlements are situated. The inhabitants are Eskimos, with a few Danish settlers. The wealth of the country consists almost entirely in the whale and seal fisheries. Greenland was settled in the eleventh century for a short period by Norsemen. Later it was visited by English fishermen, but it was not until the eighteenth century that Danish missionaries established the first permanent European settlements.

The Faeroes are a mountainous group lying between Scotland and Iceland. They were originally colonised from Norway, but are now politically Danish. Sheep farming, fishing, and the cultivation of hardy crops maintain a scanty and somewhat primitive population.

The large volcanic island of Iceland is a region of great historical interest. In the days of the Viking colonisation, it became a stepping-stone on the route to Greenland and America. For a short period the people attained an extraordinarily high degree of culture, and gave to the world the wonderful prose epics of the Icelandic Sagas, together with a wealth of fine poetry. The very factor of isolation, however, which probably accounts for its vigorous individuality, also led to an early decline.

To-day Iceland is a sovereign state united with Denmark in

the person of the Danish king The present constitution, which dates from 1918, is modelled on that of Denmark The settled population is confined to coast villages and the few lowlands Sheep farming is the chief industry, but the Iceland fishing-grounds are visited by British, French, Norwegian, and Danish fishermen in great numbers

**The North Sea**—A description of the Scandinavian peoples would be incomplete without reference to the North Sea The waters, which are partially enclosed by the northern shores of Europe, by the British Isles, and by Iceland, have played a part in history scarcely less important than that of the Mediterranean In naval history, the North Sea has witnessed the disastrous flight of the Spanish Armada, the thunderous duels of English Blake and Dutch Tromp, and the more deadly struggle of the Great War Along its coasts and up its estuaries moved the early medieval traders Its shallow seas have proved the richest fishing ground in the world Above all, its waves carried from the German river mouths and from the Scandinavian wicks the ancestors of the English people, who in turn set forth on broader seas to found new kingdoms in the west and south In many ways, it has been the Mediterranean of the northern peoples

**Contributions to Civilisation**—Quite apart from the brilliant literature of the early Norse and Icelandic times, the Scandinavian peoples have made splendid contributions to the great body of Western civilisation

In Linnæus, the father of botany, Sweden gave to science one of its most devoted spirits The lyric beauty of Grieg's music is peculiarly suggestive of the mountains and fjords Hans Christian Andersen, the Dane, and the Norwegians Ibsen and Bjornson, have had a world wide influence in two very different branches of literature It is not too much to say that Ibsen was the forerunner of the modern English dramatists In Art, Thorwaldsen, of Iceland, was probably the greatest sculptor of the early nineteenth century

It is, however, in the service of geography that Scandinavians have been most prominent Ever since the days of the Viking

discoveries, these lands have sent forth travellers and explorers. The Swede, Dr. Sven Hedin, carried out some remarkable journeys through Central Asia at the beginning of the present century, but the regions which the Scandinavians have made their own are the Polar regions. During the second half of the nineteenth century, the Swede Nordenskjöld was the first to overcome the difficulties of the North-east Passage from the North Sea to the Bering Strait. Amundsen, a Norwegian, and Stefansson, a Canadian of Icelandic descent, have carried on his great work, the former being the first to reach the South Pole. Dr. Nansen is, however, undoubtedly regarded as the greatest living explorer. He has recently turned from the service of geography to that of peace, and his magnificent and devoted work for the reconstruction of Europe since the Great War is a fitting symbol of the great and honourable position which continues to be held by the Scandinavian peoples among the nations of the world.

D. G.

J. A. D.

# INDEX

AALESUND, 287  
 Afforestation, 129, 239, 242, 285  
 Ain, 61  
 Aix, 74, 96, 122  
 Aix-la-Chapelle, 215, 217, 220  
 Alais, 59, 95, 109, 127, 130  
 Aland Islands, 301  
 Albigenian Crusade, 118, 124  
 Alicante, 177, 180, 184, 185  
 Alkmaar, 245  
 Allier, 42, 43  
 Almaraz, 183  
 Almeida, 183  
 Almeloo, 243  
 Almeria, 177  
 Alps, 2, 17, 20, 22, 37, 42, 44, 50, 93,  
     131, 148, 155, 161, 206  
 Alsace-Lorraine, 44, 55, 56, 59, 63,  
     71, 83, 85, 223, 255  
 Amerigo Vespucci, 7, 163  
 Amiens, 57, 62  
 Amsterdam, 243, 245, 248  
 Andernach, 208  
 Angermann, 285  
 Anjou, 51  
 Antwerp, 126, 215, 226, 229, 245,  
     247, 249, 250  
 Apennines, 2, 17, 131, 141, 147  
 Aquitaine, basin of, 41  
 Arc, 44  
 Arcachon, basin of, 57  
 Ardennes, 22, 39, 44, 64, 232, 242,  
     245  
 Argens, 74  
 Argonne, 45, 53, 64  
 Arles, 100, 114, 116  
 Arras, 247  
 Artois, 39, 45  
 Aspect, 97  
 Aurillac, 42  
 Auvergne, 37, 47, 61, 73  
 Aveyron, 59  
 Avignon, 100, 107, 114, 123, 124, 127  
 Avila, 184  
 Aygues, River, 96  
  
 BADAJOZ, 183  
 Bamberg, 218

Barcelona, 6, 181, 185, 190, 196  
 Barmen, 212  
 Basle, 64, 71, 208, 210, 216, 217, 220  
 Basque, 76, 189  
 Beauce, 39, 57, 72  
 Beaune, 107  
 Belfort, 75, 112, 215  
 Bergen, 9, 287, 290, 291  
 Besançon, 110  
 Béthune, 59  
 Bilbao, 172, 181  
 Bingen, 217  
 Blanc, Mont, 41  
 Blois, 40  
 Bologna, 147, 151  
 Bonn, 208  
 Bordeaux, 9, 66, 69, 72, 126  
 Boulogne, 58, 64, 67  
 Bourg, 74, 97  
 Bourgogne, 59  
 Bourttanger Moor, 230, 257  
 Brabant, 231, 241  
 Bray, Pays de, 45  
 Bresse, 55  
 Brest, 6, 74  
 Brie, 40, 53, 55, 57  
 Brière, 42  
 Brie, 59  
 Brindisi, 148  
 Brittany, 5, 37, 41, 46, 51, 55, 57, 74,  
     77, 89  
 Bruges, 231, 254, 264  
 Brussels, 247, 251  
 Burgos, 181, 183, 184, 185, 187  
  
 CABRAL, 24  
 Cadiz, 181, 185, 188  
 Caen, 45, 57, 59  
 Cahors, 41  
 Calais, 63, 64, 81  
 Camargue, 96, 102  
 Cambrai, 247  
 Campine, 230, 232, 242, 246  
 Cantabrian Mountains, 169, 176, 188  
 Cantal, 42  
 Carcassonne, 63, 71, 73, 74  
 Cartier, 86  
 Causses, 42, 50, 51, 57, 134

- Central Highlands of France, 2, 17, 21, 37, 42  
 Cette, 58, 114  
 Cévennes, 42, 50, 93  
 Chalon-sur-Saône, 99, 107, 114  
 Champagne, 40, 45, 53, 56, 62  
 Champlain, 86  
 Character, influence of Geography on, 5, 21, 117, 121, 189, 191, 192, 193, 197, 203, 222, 223  
 Charente, 56  
 Charleroi, 245, 246, 247  
 Chartres, 72, 74, 76  
 Châteaulin, 41  
 Chaumont, 75  
 Cherbourg, 74  
 Ciudad Rodrigo, 183  
 Civilisation, influence on native races, 28  
 Climate, continental, 137, 173, 279  
 —, maritime, 7, 47, 172, 233, 277  
 —, Mediterranean, 7, 14, 26, 102, 135, 175  
 —, transitional, 7, 100, 209  
 Climatic regions, 47, 141, 172  
 Coal, 29, 59, 93, 172, 212, 243, 288  
 Coastline, 5, 135, 170, 218, 273  
 Coblenz, 37, 215, 217  
 Colmar, 63, 212  
 Cologne, 75, 213, 215, 216, 217, 221, 223  
 Colonisation, Dutch and Belgian, 251  
 —, French, 26, 88, 126  
 —, Italian, 26, 163  
 —, Scandinavian, 302  
 —, Spanish and Portuguese, 202  
 Columbus, 7, 24, 159, 163, 199  
 Condroz, 232, 242  
 Conurbations, 28, 109  
 Cook, Captain, 24  
 Copenhagen, 138, 291, 292, 300  
 Córdoba, 185, 186, 193, 195, 196, 198  
 Corsica, 2  
 Corunna, 181  
 Côte d'Or, 56, 63, 66, 71, 74, 93, 97, 103, 112  
 Cotentin, 46  
 Courtrai, 247  
 Crau, La, 96  
 Cyclones, 9, 14  
 DAIRYING, 142, 244, 283, 284  
 Dannemora, 288  
 Dauphiné, 44, 61  
 Deforestation, 128, 142, 177, 210  
 Delft, 244  
 Delta formation, 96, 133, 208  
 Deventer, 243  
 Dieppe, 64, 74  
 Dijon, 66, 74, 107, 113, 127  
 Dora Baltea, 133  
 Dordogne, 45  
 Doubs, 71, 98  
 Douro, 171, 180, 185  
 Drainage, 129, 237  
 Drake, 24  
 Drepte, 243  
 Drome, 96  
 Duisburg, 209, 213  
 Dunee, 228, 231  
 Dunkirk, 62  
 Durance, 61, 96  
 Dykes, 228, 241, 259  
 Enns, 170, 171, 175, 182  
 Elberfeld, 212  
 Elche, 177  
 Elvas, 183  
 Emigration, 157, 204, 302  
 Enschede, 243  
 Environment, influence of man on, 128  
 Esbjerg, 287, 291  
 Esch, 253  
 Eskilstuna, 289  
 Essen, 212  
 Eure, 72  
 Exploration, age of colonisation, 23, 86, 260  
 —, age of discovery, 3, 24, 163, 199, 260  
 —, age of scientific, 25  
 —, early Norse, 5, 20, 303  
 FÆROES, 303  
 Fabun, 288  
 Famenne, 232, 242  
 Fascism, 21, 164  
 Fauna, 141, 176, 281  
 Finmark, 285  
 Fisheries, 57, 141, 181, 236, 285  
 Fiume, 147, 161, 162  
 Fjord, 5, 273  
 Flanders, 231, 241  
 Florence, 151  
 Flower-growing, 228, 239  
 Flushing, 243, 250  
 Foehn, 102  
 Fontainebleau, 53  
 Forez, 43, 50, 55  
 Frankfurt, 213, 215, 220, 224  
 Freiburg, 216  
 Frontiers of Western Europe, 20, 22, 25, 83, 161, 219  
 Fruit growing, 241

GAPS, 41, 63, 112, 206, 214

Gard, 59

Garda, Lake, 133

Garigue, 52, 105

Garonne, 5, 45, 56, 69, 71

Gefle, 285, 292

Gelderland, 243

Germanic invasion, 18, 112, 124, 195

Genoa, 147, 148, 151, 157, 163

Geographical control, 1, 7, 19-24,  
30, 117, 122, 158, 168, 189, 241,  
254, 264, 283, 302

Ghent, 247

Gibraltar, 187, 188, 192

Gijón, 181

Gironde, 45, 47, 56, 57

Glacial action, 93, 206, 230, 268

Glass, 245

Gorinchen, 250

Göta Canal, 291

Göteborg, 291, 292

Gouda, 244

Granada, 192

Grangesberg, 288

Greek colonisation, 17, 30, 117, 121,  
154, 190

Grenoble, 44, 62, 110, 113, 127

Grésivaudan, 44

Groningen, 244

Guadalquivir, 169, 171, 178, 185, 192

Gulf Stream Drift, 7, 173, 277

HAARLEM, 239

Haarlemmermeer, 237, 239

Hague, The, 244

Hainault, 232, 242

Hammerfest, 287

Hanseatic League, 297, 298

Haparanda, 279, 282, 285

Havre, 62, 64, 72, 74

Heidelberg, 208, 215

Helsingborg, 291

Henry the Navigator, 193, 199

Hercynian Mountains, 2, 37, 41

Hesbaye, 232, 242

Hook of Holland, 250

Hydro-electricity, 29, 53, 61, 109,  
121, 147, 166, 212, 288

ICE AGES, 4, 15, 206, 270

Iceland, 9, 303, 304

Iron, 59, 109, 181, 245, 287

Irrigation, 179

Isère, 44, 61, 107

Isonzo, 134

Istria, 161

Italian unity, 20, 127, 159

JÉREZ, 178, 179, 180

Jura, 37, 42, 44, 50, 57, 61, 93, 99,  
108, 127

KARLSKRONA, 292

Karlsruhe, 216

Karst, 42, 57, 135

Katwijk, 236

Kelheim, 218

Krefeld, 213

LAKE, former, 39, 93

Landes, 45, 52, 72

Land tenure, 145, 146, 242

Langres, Plateau de, 50, 66

Language, 32, 90, 118, 262, 267

Languedoc, 96, 107

La Pallice, 40

Lapps, 282, 283, 294

La Rochelle, 58, 75

Le Creuzot, 59, 109

Le Maire, 260

Lens, 59

Liège, 245, 246

Lijmfjord, 287

Lille, 62, 72

Limagne, 43, 50, 55, 69

Limoges, 62, 72, 73, 74

Limousin, 43, 47, 50, 55, 57, 74

Linköping, 289

Lisbon, 172, 183, 184, 185

Literature, influence of Geography  
"on, 91, 92, 223

Live stock, 57, 106, 144, 239, 283

Loess, 4, 93

Lofoten Islands, 286

Loire, 40, 41, 43, 59, 66, 69

Lombardy, Plain of, 17

Longwy, 59

Lorient, 58, 67

Lot, 61

Louvain, 250

Louvière, la, 246

Lulea, 290

Lunéville, 59

Luxemburg, 252

Lyon, 63, 69, 72, 99, 108, 114, 115,  
127

MAASLUIS, 236

Mâcon, 101, 107

Madrid, 170, 174, 176, 183, 184, 185,  
187, 191

Magellan, 7

Maggiore, Lake, 133, 135

Maine, 51

Mainz 208 211 214 215 219 220  
     223  
 Malines 250  
 Malmo 291 292  
 Mannheim 208 214 215  
 Maquis 52 105  
 Marken 262  
 Market gardening 56, 239—  
 Marne 50 64 67 71 75  
 Marseille 6 29 66 71 72 74 93 102  
     108 109 110 114 119 121 126  
 Maures Monts des 74  
 Mediterranean influence of 2 6  
 Mediterranean race 13  
 Meseta of Spain 2 21 169 173  
 Metz 215 217  
 Meuse 40 44 64 71  
 Mézenc 42  
 Middle Kingdom 125 221 223 255  
 Migration influence of climate on  
     17 26 117 122 214  
 Milan 108 147 149 150 157 160  
 Millevaches 43 73  
 Minio 133  
 Mistral 102 139  
 Mons 245 246  
 Mont d'Agde 95  
 Montélimar 100  
 Montpellier 110 127  
 Moorish influence 124 179 188 192  
     195 197  
 Morbihan 57  
 Moresnet 246  
 Morvan 39 43 50  
 Moselle 44 45 64  
 Mountains block 2 27 39 93 168  
   — fold 2 37 93 168  
   — fracture 2  
 Mulhouse 62 71 75 212  
 Murcia 179  
  
 NAMUR 59 64  
 Nancy 37 59 64 75  
 Nansen 305  
 Nantes 69 74  
 Naples 148 153 157  
 Narbonne 73  
 Narvik 288 290  
 Nationality influence of Geography  
   on 19  
 Nieuwied 208  
 Nîmes 110 123 127  
 Noordwijk 236  
 Normandy 40 51 57 59 67 100  
 Norrköping 289  
 North Sea 15 304  
 Nuits 107  
 Nürnberg 211 214 215 217 218

OISE 64 69  
 Olive cultivation 55 142 180  
 Oporto 180 183 185  
 Örebro 289  
 Orient Express 33 126 217  
 Orleans 72  
 Öslung 252  
 Oslo 290 291 29  
 Ostend 250  
 Oudenarde 247  
 Overijssel 243  
 Oviedo 172 181  
  
 PALERMO 154 157  
 Paris 4 23 29 30 31 63 64 66-7  
 Paris Basin 39 45  
 Pas de Calais 59  
 Passes 97 112 148 162 183  
 Pays de Dombes 97 127 129  
 Périgord 45  
 Périgueux 41 73  
 Pforzheim 214  
 Phœnician voyages 18 30 117 121  
     172 188  
 Phylloxera 107  
 Piave 134  
 Picardy 40  
 Pisa 133  
 Po 133  
 Poitou 37 41 63 66  
 Polder 228 237  
 Pontarlier 74  
 Port de Bouc 58  
 Pottery 245  
 Prealps 44  
 Pressure 9 279  
 Provence 44 56 61 76  
 Pyrenees 2 17 20 41 43 63 168  
     172 176  
  
QUADRILATERAL OF FORTRESSES 150  
     160  
  
 RACE Alpine 16 77 117 155 218  
     263 294  
   — Mediterranean 15 117 155 192  
   — Nordic 18 77 120 218 293  
 Rain red 139  
 Rainfall 101 172 210 233 279  
 Rambouillet 53  
 Region of difficulty 2 21 232 242  
 Reims 40 55 62 64  
 Reindeer 281 282  
 Remagen 208  
 Renschied 212  
 Renaissance 158 159  
 Rennes 41 51 74

Rhine, 4, 22, 39, 71, 207, 226, 237  
 Rhine frontier, 22, 83, 219, 254  
 Rhone, 62, 76, 93, 99  
 Ria, 5, 170, 181, 273  
 Risorgimento, 159, 160, 161  
 Roermond, 243  
 Roman influence, 76, 122, 179, 194  
 Rome, 23, 152, 157, 160  
 Roncesvalles, 63  
 Roskilde, 292  
 Rotterdam, 243, 245, 248  
 Roubaix, 62  
 Rouen, 6, 62, 64, 72  
 Roulers, 247  
 Roussillon, 56  
 Routes, air, 34  
 —, ocean, 33, 126  
 —, overland, 33, 66, 71, 110, 115  
     182, 214, 264, 290  
 Rove, 71  
 Ruhr district, 212  
  
 SAAR BASIN, 4, 59, 212  
*Saeter*, 283  
 St. Étienne, 108, 109, 114, 127  
 St. Malo, 57  
 St. Nazaire, 74  
 Sagres, 193  
 Sambre, 64, 232, 242  
 Santander, 181  
 Santcs, 41  
 Santiago, 173  
 Saône, 37, 42, 63, 93, 97  
 Saragossa, 175, 184, 186  
 Sardinia, 2, 155, 157, 160  
 Saverne, 64  
 Savoy, 44  
 Scarpe, 69  
 Scenery of Italy, 140, 141  
 Scheveningen, 236  
 Schiedam, 244  
 Schleswig boundary, 23, 268, 300  
 Schleswig-Holstein, 297, 298, 300  
 Schönen, 288  
 Schouten, 260  
 Seine, 4, 64, 65  
 Seville, 179, 181, 182, 192, 195, 196  
 Shipping, 289  
 Sicily, 2, 154, 160  
 Sierra de Gredos, 170  
 — — Guadarrama, 170, 172, 183,  
     184, 186  
 — — Morena, 169, 172  
 — — Nevada, 2, 169, 172  
 Silk industry, 68, 108...  
 Sill of Artois, 233  
 Soil, influence of, on crops, 55, 211,  
     216, 221, 241

Solingen, 212  
 Sologne, 41, 50  
 Somme, 45, 56  
 Sound, The, 297  
 South Limburg, 231, 243  
 Spain, unity of, 20, 189  
 Sprimont, 246  
 Stockholm, 291, 293  
 Strasbourg, 37, 63, 64, 75, 212  
 "Swiss manufactures," 110, 214

TAGLIAMENTO, River, 134  
 Tagus, 171, 183, 185, 187  
 Tarn, 45, 59  
 Tasman, 25, 260  
 Temperature, 7, 46, 100, 136, 172,  
     209, 233, 279  
 —, inversion of, 138  
 Terrace cultivation, 129  
 Textiles, 62, 147, 243  
 Ticino, 133  
 Tides, 228  
 Timber, 284  
 Toledo, 170, 183, 196  
 Tordesillas, Treaty of, 201, 202  
 Toul, 64, 75  
 Toulon, 74  
 Toulouse, 45, 73  
 Touraine, 40, 41  
 Tourcoing, 62  
 Tournai, 247  
 Tours, 66, 72, 92  
 Town positions, 29, 73, 112, 113, 123,  
     150-2, 185, 213, 251, 291  
*Transhumance*, 106, 121  
 Trentino, 161  
 Trier, 215, 217, 221  
 Trieste, 147, 161, 162  
 Tromsø, 287  
 Trondhjem, 284, 290, 291, 292  
 Troyes, 62  
 Trujillo, 183  
 Turin, 74, 79, 147, 148, 150, 157

UTRECHT, 230, 233

VALENCE, 56, 100, 114, 127  
 Valencia, 179  
 Valenciennes, 59, 91  
 Valladolid, 184  
 Valley, rift, 2, 6, 39, 205  
 —, synclinal, 6, 99  
 —, transverse, 99  
 Valois, 40,  
 Vardo, 279  
 Vasco da Gama, 7, 199



- Vegetation, 14, 103, 235  
 —, alpine, 281  
 —, Mediterranean, 14, 50, 105, 139, 177  
 —, parkland, 15, 51, 103, 280  
 Velay, 42  
 Venice, 6, 7, 126, 147, 150, 161  
 Verona, 150  
 Versailles, 67  
 Verviers, 247  
 Vienne, 73, 74  
 Vigo, 181  
 Vikings, 294, 295, 296  
 Viticulture, 55, 97, 107, 142, 179, 211  
 Vitoria, 183  
 Vlaardingen, 236  
 Volcanic activity, 37, 42, 134, 168, 172, 208  
 Volendam, 262  
 Vosges, 2, 21, 22, 39, 44, 50, 56, 93  
 WATERWAYS, 69, 116, 182, 218, 248, 291  
 Western civilisation, 1, 2, 4, 6, 23, 28, 30, 158  
 Wheat, 55, 143  
 Wind, 235  
 Wind belts, swing of, 14, 102, 135, 175  
 Winds, local, 102, 138, 139  
 YONNE, 40, 43, 75  
 Ypres, 247  
 ZEEBRUGGE, 250  
 Zuider Zee, 236